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NEW YORK
TIMES BUILDING, BROADWAY AND 42D STREET

REGULAR EDITION

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CONTENTS

TEXT PP. 181-188 and V.-XVII.

EDITORIAL SUMMARY.
ESSENTIALS OF SCHOOL SANITATION—II.
THE MONUMENTAL TREATMENT OF BRONZE—II.
A FEW REMARKS ON FOUNDATIONS.
NOTES AND CLIPPINGS.
SOCIETIES, PERSONAL MENTION, ETC.

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Alphabetical List of Advertisers.

(For Classified List see Page 18.)

A

Alsen Cement xix
American Asphaltum & Rubber Co. x
American Mason Safety Tread Co. ..xii
American Sheet and Tin Plate Co. e-o-w, xv
Andrews, A. H., Co. x
Architect and Contract Reporter ii
Art Metal Construction Co. x
Associated Expanded Metal Co. xvi
Atlas Portland Cement Co. ..o-a-m, xix
Automatic Mail Delivery Co. xiii

B

Barrett Mfg. Co. xiv
Batchelder & Co., C. H. xvii
Benedict & Burnham Mfg. Co. e-o-w, xiii
Berger Mfg. Co. iv
Blome, R. S., Co. xx
Building News xiii
Butcher Polish Co. ..... e-o-w, ix

C

Cairns, Hugh xvii
Campbell, Walter M. xii
Chicago & Alton Ry. xv
Crane Co ix
Cudell, F. E. ..... e-o-w, xvii
Cummings Filter Co. xix
Cutler Mfg. Co. iv

D

Dadmun, Leon E. xvii
Deane, E. Eldon xii
Dixon Crucible Co., Jos. ix

E

Elevator Supply and Repair Co. iii
Elston, A. A. xvii
Erickson Electric Equipment Co. xvii

F

Fisher Co., Robert C. iii
French & Co., Samuel H. ix
Frink, I. P. ii

G

Globe Ventilator Co. xviii
Goerz, C. P. v
Guastavino, R., Co. ..... o-a-m, xiii
Gurney Heater Mfg. Co. xx

H

Hartmann Bros. Mfg. Co. xiii
Harvard University iii
Hayes, Geo. v

I

Illinois Steel Co. xx
Imperial Expanded Metal Co. xvii

J

Jackson Co., Wm. H. xx
Jenkins Bros. x
Johnson & Co., H. A. xvii
Jones, T. W. ..... e-o-w, v

K

Kinnear Mfg. Co., The ii

L

Lane, John vii
Lawrence Scientific School iii
Loomis-Manning Filter Co. iii
Lord & Burnham Co. v

M

Mass. Institute of Technology iii
Miller & Bro., James A. v
Mississippi Wire Glass Co. x
Morrill & Whiton Construction Co. ..xvii
Merrill, E. L. xii
Morse Co., F. E. ii
Moss, Chas. E. xvii
Mott, J. L. xvi

N

National Fireproofing Co. v
Neuchatel Asphalt Co. x
New Jersey Zinc Co. ..... o-a-m, ix
New York Belting & Packing Co. e-o-w, xi
Northwestern Terra Cotta Co. xii

O

Ohio State University iii
Okonite Co. (Ltd.) ..... e-o-w, iv
Otis Elevator Co. xv

P

Pennsylvania Rubber Co. vii
Phillips, A. J., Co. iv
Pratt Institute iii

R

Richey, Browne & Donald x
Rider-Ericsson Engine Co. xvi
Ruud Manufacturing Co. xiv

S

Samson Cordage Works ..... e-o-w, x
Shirley Radiator Co. xii
Silver Lake Co. xvii
Simpson Bros. Corporation xvii
Sleep, Elliot & King Co. xvii
Smith & Co., Edward iii
Smith Co., H. B. ..... e-o-w, xii
Society of Beaux-Arts Architects iii
Spaulding Print Paper Co. xvi
Standard Fire-escape & Mfg. Co. xvii
Standard Sanitary Mfg. Co. ..... e-o-w, iv
Sturtevant Co., B. F. xi

T

Taylor Co., N. & G. ..... e-o-w, vii
Taylor, J. W. xii
Thorn, J. S., Co. ..... e-o-w, v
Troy Laundry Machinery Co. xx
Truss Metal Lath Co. xvii

U

University of Pennsylvania iii
United States Foundry & Sales Co. xiv
U. S. Mineral Wool Co. v

V

Valle & Young xx

W

Warren Chemical & Mfg. Co. x
Washington University iii
Williams, John x
Winslow Bros. Co., The xix
Wister, L. & R., & Co. ..... o-a-m, viii

Y

Yale & Towne Mfg. Co. iii

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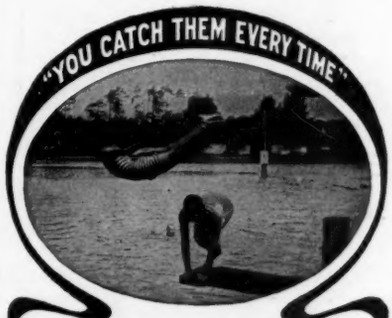

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According to the annual report of the State Board of Arichtects, satisfactory improvement in the architecture of New Jersey is being wrought by the State laws governing the practice of the art. The document holds that it is not easy to point out specifically what benefits have accrued to the people of the State from any particular law, but it is certain that the statutes involving architects have shut out many incompetents, and its enactment has had the effect of making architects more craeful in their work because of the fact that any certificate to practise may, under the law, be revoked if its holder is guilty of incompetency, dishonesty, gross carelessness or neglect.

The report states that many persons applied for certificates to practise who claimed they were practising March 24, 1902, the date of the commencement of the operation of the present law, and for this reason maintained they were entitled to a legal certificate without examination. This evil was remedied by an amendment enacted by the Legislature of 1903. The amendment provided that if any applicant for registration was satisfactory to the majority of the Board he might, upon payment of an additional $15, receive a certificate authorizing him to practise as an architect. The Board says in the report that during the two years it has been in existence it has done its best to carry out the law creating it.

The financial statement shows that the total receipts for the year were $4,709.41 and the disbursements $3,406.90, leaving a balance on hand for the year of $1,302.51. The balance for the year previous was $1,917.03, making a total balance in the hands of the Board amount to $3,219.54.

Besides the body of the report the document contains several appendices, one of which gives a list of registered architects of the State. The rules of the State Board are given, the various forms used in the prosecution of its work are exhibited and the laws relating to the Board are presented in full.

NEW M. I. T. TRAVELING SCHOLARSHIP.

The Department of Architecture of the Massachusetts Institute of Technology has just received from a friend the generous gift of $1,200 for a traveling scholarship. It is to be awarded solely on the basis of distinguished merit, as it was felt that the prize would thus possess a greater value for the advancement of architecture than if restricted to benefit only the regular or the needy student.

The competition will be for Technology students, but they must be regularly entered in the course of advanced design.

The prize will be awarded at the end of the school year in 1906. The last part of the term will be devoted to competitive work, to which will be admitted the accepted candidates.

The winner of the prize will be expected to start for Europe before September 1, and must remain abroad a complete year unless otherwise authorized. The general outline of the course of travel and study proposed are matters which have not yet been fully considered.

EXHIBITIONS.

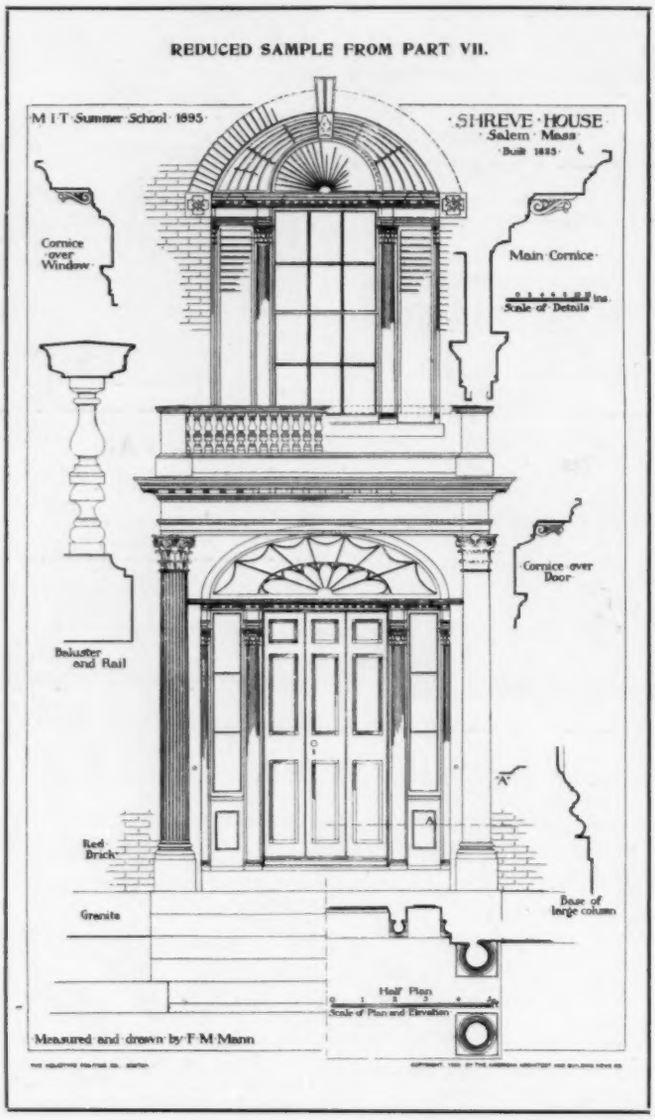
EXHIBITION OF THE PITTSBURGH ARCHITECTURAL CLUB.

The architectural exhibition of the Pittsburgh Architectural Club, recently held at Carnegie Institute, has been a pronounced success. More drawings were shown than ever before, and the larger crowds of visitors showed that the public is taking a greater interest in architectural work. Spe-

Continued on page vii.

The Georgian Period

An Encyclopaedia of Colonial Architecture



THE most important feature of this work, and the one that separates it from all other publications relating to the subject of so-called colonial architecture, is indicated very inadequately by the adjoining illustration. This is a reduced fac-simile page, one-fourth the area of the original, showing one sheet of the measured drawings, which constitute the real framework of the book. ¶ There are in all one hundred and eighty-one sheets of this sort; many of these containing much more information, as the simpler ones are necessarily chosen for reduction. ¶ Besides these drawings, there are sixty-three gelatine prints and 108 half-tone plates, and over five hundred text illustrations.

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EXHIBITIONS.

Continued from page v.

cial attention has been given this year to the showing of designs for the improvement of the important centers of different cities. H. Hawley exhibited one of the best drawings of this class, a beautiful water color of a bird's-eye view plan No. 2 drawn up by the special committee appointed by Mayor Wells, of St. Louis, for the municipal group and public parkway. The drawings submitted in competition for the Carnegie Technological Schools in Pittsburgh were shown, among them being the successful design submitted by Architects Palmer & Hornbostel, of New York. The design of Architects Alden & Harlow for the extension of the present Carnegie Institute which is now being built was also shown.

Cram, Goodhue & Ferguson, of Boston, contributed several church designs, the best being their chapel for the University of the South, at Sewanee, Tenn. Howell & Stokes showed the drawings for the new St. Paul's Chapel of Columbia University, New York, a domical building without columns. Montford Hill Smith, of Boston, showed his design for a village church, which received warm comments. Much interest was taken in the design of Reed & Stem for railroad terminal and office building. The first-prize design of the Rotch Traveling Scholarship Competition, won by William D. Crowell, was also on exhibition and was the best example present of the French Renaissance work. The class of drawings which interested most local visitors were those of modern residences of moderate cost. Among the best designs exhibited were those of Architects Rutan & Russell, MacClure & Spahr, T. E. Billquist, Beezer Brothers, Allison & Allison, Alden & Harlow, all of Pittsburgh.

PERSONAL MENTION.

NEW YORK, N. Y.—President Cassidy has appointed John T. Rogers, Superintendent of Public Buildings for the Borough of Queens, to succeed the late Philip T. Cronin. Before consolidation Mr. Rogers was for a number of years Overseer of the Poor in Queens, and under the Van Wyck administration he served as Collector of taxes and Assessments. His home is in Flushing.

MINEOLA, L. I.—The suit of Abner J. Haydel, an architect, against Howard Gould, for $50,000, for services in making plans for a residence for Mr. Gould at Castle Point, was begun on Friday. The architect claims that he spent four years in making plans and changing them to suit Mr. Gould, and they were not satisfactory.

INDUSTRIAL INFORMATION.

Messrs. Edward Smith & Co., 45 Broadway, New York, are putting on the market a new "matte finish" coating, which, although it contains no wax, dries with a dull finish, thus saving expense of rubbing down.

Amongst the best proofs of the importance of architects in manufacturers' eyes are the sumptuous publications which the latter frequently present to the former. Few manufacturers spend more in such publications than the J. L. Mott Iron Works, 84-90 Beekman St., New York, and their latest catalogue, entitled "Mott's Modern Porcelain-Enameled Iron Lavatories," is an excellent example of high-class catalogue work. The cover is tasteful, the paper and presswork of the best quality, the illustrations made to a sufficiently large scale and beautifully printed; the type matter is clear, and dimensions and prices are noted in sufficient detail.

Doubtless the outlay for making and distributing this, though great, is warranted because of the almost universal practice amongst architects of filing publications of this sort and frequently referring thereto.

The Burger Iron Company's (Akron, O.) new 1905 wire catalogue gives drawings and prices of their stock designs for counter, office and bank railings, wickets and money guards, elevator enclosures and cars, lockers, cages, summer-houses, skylight and window guards, stall partitions, signs, etc. They also make goods to special design and manufacture all kinds of ornamental iron work.

The Coulson Patent Store Front Construction, as illustrated in the handsome catalogue of the manufacturers, J. W. Coulson & Co., Columbus, O., seems particularly adapted for providing unobstructed display windows. The details of construction are very fully shown by excellent cuts. By this system the plate glass is set in posts and

A MEMBER of the editorial staff of the American Architect is now in Europe.

His route takes him through Italy, Western Germany, France and England.

We shall appreciate any suggestions from our readers which will aid us in obtaining material that is most likely to prove useful and interesting to them.

The Editors.

THE AMERICAN ARCHITECT,

Times Building, Broadway and 42d St., New York.

bars, which consist essentially of steel T's, encased in wood, which is covered with sheet metal. The glass does not come in contact with metal, and is set in position from the outside.

The Farquhar One-Piece Welded Steel Self-Regulating Furnace is, in the words of the Farquhar Furnace Co., of Wilmington, O., who manufacture it, "a departure." It aims to provide many advantages, amongst which are the following: A fire ample in volume but moderate in intensity of heat; a self-regulated fire; a lasting fire, needing attention, usually, but once a day; absolute security against leakage of noxious gases or smoke through the fire-box. This last important feature is secured by making a fire-box without joints or, rather, with nothing but welded joints. The catalogue of the Farquhar Furnace Co. is interestingly written, and puts up a very good argument for the "one-piece" furnace.

NOTES AND CLIPPINGS.

One Way of Maintaining Prices.—A remarkable step has just been taken by a combination of Welsh slate merchants. This industry has been in a very depressed condition for some time past, owing partly to the slackness of the building trade and partly to the growing competition of the foreign producer. France in particular has become a formidable competitor. In the four years ending December last the total value of foreign slates imported into Great Britain aggregated nearly 1,500,000. A combination of Welsh merchants have arrived at an arrangement with a similar combination in France, whereby the Welsh producers undertake not to reduce their present market price, but on condition that the French producer adds ten per cent. to his. —*Stone Trades Journal.*

Royal Academy Professors.—There are two vacancies in the ranks of the Royal Academy professors, caused by the retirement of Mr. Alfred Gilbert, R.A., and Mr. George Aitchison, R.A., who filled the chairs respectively of sculpture and architecture. The election of their successors will take place at no distant date, but it is probable that the number of candidates for the posts will be small. The duties are not heavy, for the professors have nothing to do with the teaching in the schools except when they take their turn as visitors. The sole business of the Academy professors of painting, sculpture and architecture is to deliver each winter a series of addresses (usually six), and for this they are paid at the rate of so much a lecture. Formerly the honorarium for each address was £10, but lately this has been largely increased.—*Builders' Journal.*

Hydrated Lime.—What is hydrated lime? Simply a slaked lime which has absorbed about one-third of its weight of water, which unites with the lime as water of crystallization, about nine pounds of water uniting with each twenty-eight pounds of quicklime. The lime, in uniting with the water, swells to about three times its former bulk and then falls into a powder. If the lime is not pure, it will not slake thoroughly; granular particles will remain in the powder and become an element of danger. The German users of hydrated lime prepare their lime a year or more in advance, as follows: Several large pits are dug, the lime is slaked and reduced to a thin paste and run into the pits. The unslaked particles settle to the bottom, leaving a pure, clean paste above. After this paste is a year old, it is ready for use. A question which has frequently been asked is: What is the advantage of hydrated lime over free lime? The reply is, that the chief advantage of hydrated lime over free lime is that hydrated lime will not swell or expand in finished concrete work as free lime will. The swelling of free lime in concrete after the work has set and hardened sets up internal stresses and causes the work to crack and peel off on the surface and blow-holes to appear.—*Stone Trades Journal.*

Window Glass by Machinery.—Under date of April 28, 1905, United States Consul Roosevelt, Brussels, Belgium, transmits the following copy of an article from the London *Daily Mail* of April 26, relative to the manufacture of window glass in Belgium by machinery invented by Emile Fourcault, honorary engineer of the mines at Lodelinsart, near Charleroi:

"The Fourcault machine turns out continuously sheets of glass 39½ inches wide, of any desired length and of a uniform thickness, varying from one-fifteenth to five-sixteenths of an inch. This glass can be obtained as rough glass for making extra thin glass, as horticultural glass, and

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as window glass for certain export markets. The machine is described as a box of fire-brick material floating on a 'springing fountain' of glass. In the bottom of this box is a slit called the stretcher, and through this stretcher a sheet of plate glass is introduced into the molten mass. The molten glass adheres to this plate. When the plate is pulled up vertically it is followed by a mass of melted material that wells up without effort. Once started, the molten glass continues to flow out in a sheet without the plate being dipped in the stretcher again. The 'springing fountain,' in which the stretcher floats, is a kind of pit, the walls of which are heated by the heat of the glass, and on the top of the pit is an apparatus for dragging the glass up and for annealing. This apparatus is simply a chimney to draw off the heat, in which there are about seventeen pairs of rollers. The glass is lifted through these rollers by adhesion, and by the time it reaches the top of the chimney it is sufficiently cool to be cut with a diamond into desired lengths while still attached to the machine. The operation of annealing—depriving glass of brittleness by allowing it to cool slowly—is at once difficult and capricious. The greatest importance of annealing in all branches of window-glass making lay in the fact that the plastic glass had to be manipulated by tools which were colder than the glass. It was and is by the older method a very delicate operation. The Fourcault machine does away with all this. Annealing is no more a necessity. The glass coming out from the 'delivery box' cools and congeals gradually, and at a certain point has lost its heat. It is then that it comes in contact with the first lifting rollers, which are at the same temperature as the glass itself. Hence the glass appears at the top of the chimney perfectly flat, and possesses unequaled brightness on both sides. As the Fourcault machine is particularly recommended for its simplicity and for the saving of time and material which it effects, it will no doubt become of great importance to glass manufacturers."

Ancient English Inns.—There is a discussion in the English papers as to which is the oldest inn in England. A writer in *The Estates Magazine* thinks the Ostrich, at Colnbrook, Middlesex, is one of the oldest. There is every reason to believe it has been in existence 700 years, and even then took the place of an earlier inn burned down by Henry I. in consequence of the misdeeds of the tenant. The story of the Seven Stars, in Manchester, can be traced clearly back to 1356. Its existence as a licensed house dates down to that year. Among the relics of the Seven Stars is an old clock which has stood at the top of the staircase for more than two hundred years.

Disease Carried by Ocean Spray.—A French military surgeon in Algiers has recently found that spray driven ashore from a stormy sea can effectively transmit disease germs. Carrying on his investigations at Bab-el-oued, near Algiers, at a point where a number of sewers discharged into the sea, he found that the spray, which was driven some 150 ft. ashore and high into the air, contained three times the number of germs ordinarily present in the air. This spray forms a mist which permeates the houses near to the water's edge, and in it a number of virulent bacilli were found. When a gale is blowing offshore the effect is still more pronounced, and the proportion of germs increased, and the investigator is convinced that steps should be taken to protect shores from sewage pollution—*Harper's Weekly.*

Incandescent Gas Lighting. — The streets of Birmingham are not electrically lighted, but in recent years the development of the incandescent mantle and the clever devices adopted by the city for the prevention of vibration and consequent destruction of mantles exposed to the elements has resulted in a system of gas lighting much more satisfactory than those accustomed to electric lighting and knowing only the old style of gas lighting would imagine.

At a recent meeting in London of the Society of Architects, Mr. Tucker, a member of the Council of the Society and late chief surveyor of the War Office, read a paper on the subject of illumination which the *Gas World* reports at some length. He asserted that, notwithstanding the considerable improvement made in mantles of late years, to see the best incandescent gas lighting it is necessary to go to Berlin, where mantles are used without any coating to protect them in transit, the burning off of which causes deterioration and loss of incandescence. Mantles, he said, deteriorate by the action of the oxygen in the atmosphere, and therefore should not be kept in stock for any length of time. Mr. Tucker held that the incandescent burner, particularizing the style known here as the C type, is five times as efficient as the argand gas-burner and six times as efficient as the ordinary gas burner. He said that incandescent gas lighting improves natural ventilation, the heat causing a circulation which materially assists in the removal of vitiated air, where proper provision has been made for its escape, and that it undoubtedly assists in preventing down-draughts in churches, large halls, etc., and he told of the experiments which were carried out in the Museum and Art Gallery in Birmingham in 1902 by Prof. Percy Frankland of the Birmingham University, who stated in his report that the experiments clearly showed the following results:

(*a*) In the absence of any artificial illumination, there was a slight increase in the percentage of carbonic acid in the air during the course of the day. (*b*) With the electric-arc lamp illumination, the increase in the percentage of carbonic acid gas was distinctly more marked. (*c*) With the incandescent-gas illumination, on the other hand, there was a distinct diminution in the percentage of carbonic acid in the air.

Continuing, Mr. Tucker said:

It is stated that the explanation of this diminution is not far to seek, it being obviously due to the more efficient ventilation of the gallery, caused by the greater draught of heated air through the ventilating shafts placed above the incandescent gas burners. That the percentage of carbonic acid actually diminishes during the use of the incandescent gas burners proves that the products of combustion, from which damage to the pictures might be apprehended, are completely carried off by the ventilation, which is so much promoted by the gas burners.

In the opinion of Professor Frankland, the incandescent gas installation in the art gallery is to be preferred to electric arc

Continued on page xi.

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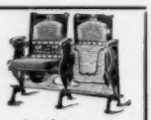

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CONTENTS

SUMMARY: 181, 182
The Improbability of Overcrowding in the Engineering Profession.—The Excess of Relative Increase in the Engineering as Compared with the Medical and Legal Professions.—Similarity of the Income Possibilities of Architects and Engineers.—The Architectural "Puller-in" and His Arguments.—The Real Powers and Functions of the Expert Adviser.—Inadvisability of Granting "Hearings" to Defeated Competitors.
ESSENTIALS OF SCHOOL SANITATION.—II. 183
THE MONUMENTAL TREATMENT OF BRONZE.—II. 185
A FEW REMARKS ON FOUNDATIONS. 187
ILLUSTRATIONS: 188
Flushing Branch: Queen's Borough Public Library, Flushing, Long Island, N. Y.—Interior of the Church of St. Patrick, Elveden, Eng.—American Security and Trust Building, Washington, D. C.—Main Floor Plan of the Same.—Basement Floor Plan of the Same—Details of the Same.—Longitudinal Section of the Same.
Additional.—Murray-Dodge Hall: Princeton University, Princeton, N. J.
NOTES AND CLIPPINGS. 188
SOCIETIES, PERSONAL MENTION, ETC. . . . . V.

"ENGINEERING NEWS," we are rather surprised to note, expresses fear lest, at the rate at which certificated engineers are being turned out by the technical schools nowadays, the engineering profession shall become overcrowded beyond all relative proportion with other professions, from which every now and then crowding in the ranks of this particular profession, in similar wails arise. The idea of any imminent real over- view of the vast size, the magnitude of the undeveloped resources and the commercial needs of this country, with its thin sprinkling of inhabitants, which yet is thickening up so rapidly, seems at first sight wildly preposterous, and, if it were the object of our contemporary to excite merely a general and aimless alarm, it would give us much pleasure to attempt to show that it was grossly misled by its fears. But as its aim really is one which appeals to our ideas of far-sighted commonsense, we will not attempt to refute its line of argument but will rather commend it for the sake of the conclusion reached. This conclusion is that the technical schools will show wisdom and an enlightened humanity if one and all shall take steps to broaden their curricula, to the end that their graduates may find themselves reasonably well qualified to enter upon some other calling in case they do not find it possible to secure an opening in the ranks of the profession they have tried to fit themselves for. We are very far from believing that the evidence contained in the biographical notes of graduates often found in the catalogues of technical schools, showing that a considerable percentage of them have abandoned their calling and taken up other means of livelihood, is really to be taken as a proof that this change of front was enforced, and that the profession was too crowded. It must be remembered that technical schools are different from the medical and legal schools with which our contemporary compares them, since, whereas the majority of students in these latter schools are men grown and generally already graduates from colleges of various degrees of educational standing, the majority of the students of the technical schools enter them as mere school-boys, a large proportion of them pursuing their studies there not by their own choice and volition, but merely because their perplexed fathers, not knowing what else to do with their offspring, accidentally selected a technical rather than a liberal education for their offspring. It is not unreasonable then that, as soon as the appointed tasks have been accomplished, and the individual, now a man, finds himself free to make his own selection, he should decide that some other field than engineering is really the one that suits him best.

THE fact that seems to have disconcerted our contemporary is that the present rate of graduation adds to the ranks of the engineering profession annually from ten to twelve per cent. of the already practising members in the shape of new recruits, all pushing for place, work and an income, while to the ranks of the legal and medical professions, for a long time commonly believed to be at least well filled, is added only between three and four per cent. each year. *Engineering News* assumes that an increase of three per cent. is what the growth of population justifies, and that two per cent. more is needed to make good the mortuary loss, and that as the engineering increment is more than double this percentage, the sitution is not properly balanced, and those in charge of technical schools would do well to minimize the impending mischief by at least adding to their curricula certain courses on business law, estimating, cost-keeping and other commercial processes which are more or less available as a serviceable equipment in many walks of life.

HARD as it is for the young lawyer and doctor to "get a start," they are more fortunate than the young architect and engineer, since they have a chance to hold as patient or client through life the first customer that happens to come to them, while the architect's customers are almost always single-job men, and the engineer's very frequently so. Consequently, for the majority of the members of both of these professions, life is a series of ups and downs, a continuous search for a new customer, since the old one had but one job to give and will never have another. Similar as their lot is, yet in one respect the engineer has the better of it, since the engineer, or a very considerable percentage of the entire profession, can sooner or later find with some municipality, railroad, mine or corporation a life position at a living wage. For the architect, however, ninety-nine times out of the hundred there is no such opening. From the beginning he must look not for permanent clients, not for a permanent berth, but simply to so build up his reputation by individual and often widely scattered works that the sum of them may bring him one more job before he and his are forced to starve. The engineer who is not so lucky as to secure a permanent salaried position is in one respect even worse off: it is the nature of his work that it should serve groups of men rather than individuals, and obviously there can be fewer groups than there are individuals who compose them, and by so much, were it not for the boundless engineering opportunities of this undeveloped country, his lot would be the least reassuring of the two.

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THE temptation, then, to both architect and engineer, to forget, under stress of circumstances, that they are members of professions, and as such bound to observe the ethics of professional procedure, and to yield to the pecuniary temptation to practise their calling as a trade and not as a profession, is possibly greater than many of their fellows imagine. But, even amongst those who follow their calling as a trade, we hope there are not many who are willing to forget that the world believes they are, as their sign-boards allege, members of a liberal profession, and prove themselves willing to employ methods that would shame a Bowery "puller-in," as witness the following letter which reaches us from an irritated architect whose amused client sends it to him:

Dear Sir:

I am told you will soon build, and it occurred to me that possibly you had not selected your architect, in which event I would be pleased to do your work on terms which I feel quite certain you will find reasonable for high-class work.

If you would care to place your order at this time I will do your work for 3½ per cent. on cost of building, and will guarantee that my commission will not exceed a certain sum, based on an estimated cost that we will agree upon beforehand.

For the nominal cost of 3½ per cent. on cost of your building it would pay you anyway to put "two heads" to work on this important building project of yours, even if you did not care to finally build from my plans. My ideas alone are worth 3½ per cent.

Your local architect's ideas may be only 70 per cent. to 80 per cent. right, may be only 60 per cent., but even if 90 per cent. right, which is a high average, you would still be 5½ per cent. ahead by ordering plans of this office at 3½ per cent., which I guarantee to be 100 per cent. right.

As a consulting architect I am often called upon for my nominal fee of 1 per cent. to completely revise and redraw plans. Owners can readily realize that 1 per cent. for an expert's services is nominal for reducing a 30 to 40 percentage of error, in bad plan arrangement, design and construction and general waste of material.

If for 1 per cent. I found your plans perfect, it would be worth this nominal sum to know that you are right. Yet this is seldom if ever the case. In each instance I have been obliged to completely redraw plans and rewrite the specifications. If I can not convince you of a considerable saving by such service, there will be no charge whatever.

Awaiting your valued commands, I remain,

Yours very truly, ————.

QUITE recently the Royal Institute of British Architects has been discussing certain proposed amendments to its by-laws and formulated regulations, and in the latter category was a proposition that the Institute should declare that the proper minimum fee for an "assessor" in a competition should be held to be "thirty guineas, plus one-half of one per cent. of the estimated cost of the projected building." As the custom of employing an assessor—expert adviser we call the official in this country—is on the increase in this country as well as in England, an authoritative expression of opinion as to what fee he deserves is much to be desired. Another thing to be desired is a clear understanding as to what an assessor's or expert's powers and functions really are, and it is most desirable that architects themselves should have a clearer conception of them, as they are very generally misunderstood by the competitors themselves. It is because of this misunderstanding that expert advisers have so often been favored with public or private verbal castigations at the hands of competitors who have felt that the experts had showed a lamentable lack of backbone and inflexibility of purpose and opinion. The fact is, simply, that, except by special and precise agreement, the expert adviser never is the very thing that competitors almost always believe him to be, that is an "arbiter" empowered to make an "award" from which there is no appeal. In reality the expert adviser's proper function is precisely that of the judge on the bench in a jury trial; he is there to expound the laws of procedure and practice to the jury and see that they have a clear understanding of the case before them; he rules out testimony that is inadmissable, and when the evidence is imperfectly presented, by a timely question to the witness he clears up a befogged situation. Then, when the evidence is all in, he charges the jury—the building-committee, that is—presents both sides of the case fairly, and expresses an opinion as to the merits of the case, leaning more or less pronouncedly to one side or the other. But he does not formulate the verdict, and he cannot set aside the one that the jury or building-committee actually does formulate. The powers and the rights are theirs, not his.

SINCE it is the function of the expert adviser to hold the scales of justice, it ought to be made sure that he does not lay them down too soon; but the history to competition, clearly shows that this need is often lost sight of, and the expert disappears from the scene as soon as he has rendered his report. It is not altogether unusual in the case of limited competitions, when the competitors are within reach, for the building-committee to allow or even to invite the competitors to come before them, one after another, and make verbal explanations of the merits and peculiarities of their designs in elaboration of the formal descriptions submitted with their designs. This step is of doubtful fairness and propriety, and whenever it is taken, care should always be had that the expert adviser also should be present at every such audience. It is a too common incident of competitions, particularly important ones, that immediately on the announcement of the decision protests are received from one or more defeated competitors, impugning the verdict and demanding a hearing. Where such hearings are granted the attendance of the expert adviser should be compulsory. If, in the case of a recent limited but important competition, the adviser had been present at one of these hearings, he would have caused to be stricken from the records one of the most astounding charges ever made by one architect against another. One of the disappointed competitors allowed himself to say that, though he had known the winner for a score of years and had a high personal regard for him, he knew that he would always "overreach" anybody and everybody to attain his ends. To have made such a statement privately in the heat of *viva voce* argument would have been bad enough, but deliberately to read it from a written brief, and later to let it appear in printed pamphlet form after having read proof of the same, marks the incident as the very acme of blind folly, for no jury that ever sat in a box would fail to give the libelled victor whatever punitory damages he might have demanded. Fortunately the libellee—a man of such high standing in the profession that the charge against him would be laughed down by everyone who knew him and his career—took a generous view of the affair and contented himself with securing the publication of an apology and the public withdrawal of the insult. But the insult could not have appeared on the record, if the expert adviser had been present.

ESSENTIALS OF SCHOOL SANITATION.[1]—II.

HEATING and Ventilation. The system adopted for warming a school-house depends upon the number of rooms to be heated and upon considerations of convenience and economy. The local system of heating by means of stoves placed in the class-rooms is practically carried out only in the case of the smallest country school-houses having but few rooms. In such buildings the method is economical because the first cost of a few stoves is much less than the outlay required for a central plant. There are, however, a number of drawbacks, such as the attendance required by the fires, the trouble connected with bringing in the fuel and the incidental disturbance of the lessons, the space required by the stoves, the dirt incident to the carrying out of ashes, and the difficulty of introducing pure outdoor air.

Heating by gas-stoves has been tried to a considerable extent, particularly in Germany; it is cleanly and convenient and has few of the disadvantages of solid-fuel stoves, but it necessrily costs from 40 to 50 per cent more in fuel than heating by wood or coal.

In large school buildings a central heating system is always preferred, because there is only one fire or boiler to be attended to, and also because the concentration of the heating-apparatus means less danger from fire. For buildings having from four to eight rooms warm-air furnaces are usually installed. This is a cheap system which can be made sanitary if a proper air-supply and properly located cold-air box are provided, and if attention is given to the degree of humidity in the air. The furnace should be large enough not to overheat the air and thus render it dry and unbreathable. In the better systems special mixing-dampers are provided so that the air can be tempered at will from the class-rooms in case of mild weather without cutting off the fresh-air supply entirely. Warm air will not travel horizontally for long distances, and during windy weather an unequal distribution of heat results, hence for large buildings warm-air heating is superseded by steam heating.

Where a school-house contains more than eight rooms a steam-heating apparatus is preferred. The heating is accomplished by low-pressure steam and preferably by indirect radiation. The heating stacks are placed at the bottom of the warm-air flues in the cellar, and fresh air conduits are provided with branches to the stacks, drawing their air-supply from an uncontaminated outdoor source. The admission of steam to the heating stacks is controlled automatically by thermostats in the more elaborate systems. Such indirect low-pressure steam-heating systems, if well designed, have proved very satisfactory. Indirect hot-water heating is a very excellent system, brt it costs more to instal than steam-heating and is not used to the same extent, though it has some advantages over steam heat.

The heating-apparatus for a large school should always be designed by an expert engineer, and the steam-boiler plant should be managed by a trained engineer assisted by experienced firemen.

Ventilation of the class-rooms is a sanitary problem of prime importance. Being so closely connected with heating, it is usually carried out by heating engineers. Ventilation is accomplished either by natural or by artificial methods. Whether a special ventilating system is provided or not, it is always desirable that each room should be flushed both summer and winter with pure air just before the school commences and also during recess. During the recitations and lectures, windows must be kept closed to exclude the street noise and to prevent dangerous draughts on the pupils.

During school hours the air of each class-room should be changed several times per hour. In this respect the requirements of sanitation often conflict with economy in construction, and in management of the heating-apparatus. The air supply required is considerable, amounting to 2,000 cubic feet per pupil per hour; the Massachusetts law requires an hourly supply of 1,800 cubic feet. This large volume of air must be taken from a pure source out-of-doors and never from the cellar. It must be suitably warmed in winter and must be distributed uniformly throughout the class-rooms without causing perceptible draughts.

It is important, to secure efficient ventilation, that all sources of air contamination within the class-rooms should be either avoided or removed. Without this measure of precaution the best ventilating system will be a failure. This constitutes one reason for placing the pupils' wardrobes outside of the class-rooms. In speaking, farther on, of school baths, I shall have occasion to point out that unclean bodies and unwashed undergarments are recognized sources of bad air, and that nothing will help more to secure ventilation than the opportunity given the children to bathe.

The removal of the foul air from class-rooms is accomplished either by natural forces, such as the difference of temperature between that of the exhaust flues and that of the outer atmosphere, or else by means of mechanical appliances, such as exhaust fans, etc. Ventilation by mechanical means is quite expensive, though it doubtless insures the best results, but in the majority of school houses a quite satisfactory ventilation is accomplished by means of ventilating flues artificially heated to insure a constant outward draught.

The thorough ventilation of the large toilet-rooms is of particular importance. Here the exhaust draught should be sufficiently strong to insure that the air from the water-closet and urinal fixtures will at no time pass into other parts of the building.

Where class-rooms are heated by a central heating-apparatus, provision should be made for adding a certain percentage of moisture to the air before it is conducted into the rooms. Where a thermostatic system of temperature control is not provided for, it is necessary that each school room should have a reliable thermometer. This should be arranged so as to be read from the corridor as well as from the class-room, so that the janitor will not disturb the classes in making his temperature observations.

Lighting. It is not possible in schools to get along entirely without artificial light, for it may be required not only in winter time, but also on dark, cloudy or foggy days and other seasons. Hence all city school buildings must be piped for gas and wired for electric lighting.

Among the chief requirements for artificial illumination are the following: each desk or table should have ample light; there should not be any injurious or disturbing shadows; the light should not flicker; it should not be blinding to the eyes; it should not give off too much heat and it should not perceptibly vitiate the air of the room.

The best artificial light is the electric light, and in particular the indirect, reflected incandescent light. The incandescent light does not give off injurious products of combustion as is the case with gas, oil-lamps or candles. It may be shaded by opaque or frosted globes in order not to be too trying to the eyes. It is much safer as regards danger from fire than any of the open-flame lights.

Where gas must be burnt it is advisable to use the ordinary flat flame burners only in the halls and stairways. For the class-rooms the round burners with chimneys and globes are better, but preferable to these are the now well known incandescent gas-lights, such as the Welsbach and others, which give a better light, give off less heat and save gas. It is found to be advantageous to surround these with suitable glass globes, such as the well known and scientifically constructed Holophane gas globes.

Lighting by means of oil-lamps or by candles is out of the question for a modern school-house, and can be considered only in the case of the smaller rural schools, or for emergency lighting when the electric current or the gas-supply is temporarily cut off.

Fire Protection. Outbreaks of fires in schools are a frequent occurrence. It is therefore quite important that in the construction of the building no point should be overlooked which would tend to increase the safety of the structure. Provision should likewise be made in the school equipment for some good fire-fighting apparatus, and the janitor should be held responsible for maintaining the same in working order. At frequent intervals the school principal should make an inspection of the appliances to satisfy himself that they are really kept in readiness.

There should be fire standpipes with fire valves and hose in the corridors of every floor, including the basement. In addition the equipment should include some portable fire-extinguishers and fire-pails. The school house should be provided with a fire-alarm gong and with telephonic communication between the principal's office and the nearest fire-engine station. There should also be telephonic communication between the principal's office and the janitor's workroom.

The teachers should instruct all children how to behave in case of a fire-alarm, and fire-drills should be instituted by the principal at frequent intervals. This matter of fire-drills is one to which too much importance cannot be attached, for numerous outbreaks of fire in schools have sufficiently demonstrated their usefulness and value in saving life, and in many actual occurrences the safe escape of the children from the building could not have been accomplished if they had not been regularly drilled.

Above all, it is imperative to provide plenty of safe exits,

[1]Continued from page 179, No. 1536.

doors which open outward, and at least two independent well-lighted stairs with strong balusters and with center rail, where the width of the stairs exceeds four feet.

Sanitary Conveniences. The question of the best location of the toilet-rooms or "sanitaries" for the pupils is one of great importance. Shall the toilet-rooms be located *within* or *outside* of the school-house? If located inside of the building, shall the toilet-rooms of a large school be placed in the basement, or shall there be one or several toilet-rooms on each of the principal floors?

Some authorities on school sanitation assert that the toilet-rooms for the children should never be placed in the basement and argue in favor of a detached pavilion, connected with the main building by a covered passageway. While, doubtless, this recommendation is made with the best intention from a sanitary point of view, the writer cannot agree with the proposition. There are several objections to outside toilet-pavilions. They are difficult to heat in winter, and the ventilation of the apartments as well as the soil-pipe ventilation through the roofs of such one-story structures is much more difficult to accomplish. Given a good and dry basement, with proper facilities for water-supply and sewerage, the writer cannot find any valid objection to the placing of the toilet-rooms directly in the basement of the school. The only condition is that there must be a good and positive ventilation of the apartments where the water-closets and urinal fixtures are placed. Where the toilet-rooms are so located it is absolutely essential that the plumbing should be sanitary and safe, but this in the present state of the art of draining buildings can be attained without question. One more condition attaches to the use of the basement for toilet-rooms, namely that the water-closet fixtures should be single or individual closet bowls, either short hoppers, pedestal wash-down closets or siphon-jet closets, with the best of flushing arrangements. The so-called "range closets" or latrines should never be used in the basement of a school. To consider such latrines superior to individual closets, as I find asserted by some authorities on school-house sanitation is, in my judgment, a grave mistake. In the same way I maintain that the use of dry earth or "dry" closets, which is rendered necessary where there is no sewer available or else no system of water-supply, should be restricted to outside pavilions.

In the largest school-houses the best and most desirable plan is to provide on each floor toilet-room conveniences, located in separate well-ventilated wings or towers. This means much saving of time otherwise unnecessarily wasted by the pupils in going to the basement. Ease of access and complete isolation are the two principal requirements regarding the location.

In all school-houses there should be on each floor at least one toilet-room for teachers' use. Sometimes this is placed within the large pupils' toilet-room with the advantage that the apartment is kept under better and more constant control of the teachers.

What number of seats should be provided for boys and girls? It is usual to have one water-closet for 25 boys and one seat for 15 girls. The water-closet apparatus should be durable and strong in construction, and simple and positive in action, for such appliances are liable to unintelligent use or even abuse. The flush is sometimes arranged to work automatically, but this always involves a large waste of water, and it is much better to provide individual-pull flushing devices. For the accommodation of the younger children it is quite common now to install closets with lower bowls and seats.

The floors of toilet-rooms should always be made water-proof and provided with one or more floor drains to permit the washing of the floor by means of a hose. Small unglazed white tiles make an excellent floor. The walls should be either tiled, or built with enamel face-brick, or be of common brick, enamel painted. The toilet partitions should not be of wood, but of either soapstone, slate or opaque glass. On the boys' side doors may be omitted to the stalls, but on the girls' side there should be light screen-doors hung with reverse hinges, and cut off about ten inches above the floor.

In an outside water-closet pavilion the water-closets may be enameled iron or solid porcelain combination ranges with automatic flush. These fixtures are somewhat cheaper than individual water-closet bowls. Some of these are good, while a great many are bad, and all are very wasteful of water. To go to the opposite extreme of having the fixtures flushed out at rare intervals by the janitor would be an unwise proceeding. All trough closets with continuous bowl and intermittent-flush cause more or less pollution of the air of the apartment, and for this reason those trough closets appear to be much preferable which have separate bowls attached to a common bottom conduit. If dry closets are used in outside pavilions the arrangements for drying the excreta and the ventilation of the closets should under no circumstances be in any way connected with that of the class-rooms. This is mentioned, although it may appear self-understood, owing to the fact that some years ago many Boards of Education allowed themselves to be misled by adopting a system of dry closets with the objectionable feature mentioned above.

Country schools sometimes have dry closets or privies which become very offensive in use, hence they should be frequently disinfected. Such common outhouses should never be located closer than 50 feet to the main building. They should be made inconspicuous, but should be connected with the school be a protected walk. Good lighting is essential for outdoor conveniences no less than for basement toilets.

Urinals. The sanitary equipment of schools includes the boys' urinals, which are important from a sanitary point of view, because they are difficult to maintain in a good sanitary condition. The number of stalls is determined by allowing one stall for 15 boys. The stalls should be constructed and arranged with the greatest attention to details. The width of each stall should be from 18 to 20 inches, and the depth of the stall partitions should be about 15 or 18 inches. Partitions are sometimes omitted, though this is not advisable; if provided they should not reach down to the floor.

All materials which corrode, disintegrate or are absorbent are quite unfit for urinals. Wooden partitions and wooden slatted platforms should never be used. Marble as well as cement are absorbent and metals, with the one exception of white enameled iron, are objectionable. From a sanitary point preference should be given to slate, Alberene stone, hammered glass and solid glazed porcelain ware.

In my judgment the floor-gutter urinals are vastly better than trough urinals and also preferable in schools to the individual-bowl urinals. The entire back wall of the urinal stall should receive a thorough flushing by means of a perforated brass pipe supplied from an intermittent flushing-tank. The modern solid white porcelain niche urinals supplied with abundant flush are probably the best kinds to use, but they are somewhat expensive and for this reason slate or Alberene stone fixtures must often be adopted. The floor in front of the fixture should slope well back to the gutter. Special local ventilation arranged at the back of the urinal and connected with a special aspirating shaft is much to be recommended. It is likewise essential that these fixtures be cleaned daily after school hours by the janitor. In fact, he should take care of all fixtures and be responsible for maintaining them in a clean and decent condition. The use of disinfectants in the fixtures should not be encouraged, for where a good type of water-closet and urinal are used, and where a well-devised sewerage system is available, such disinfection is not ordinarily required.

Lavatories and Drinking Fountains. Drinking-water should be provided for the school children in ample quantity and, what is of much more importance, of good quality. For city schools the supply is usually taken from the public or street supply, but where there is any suspicion as to the character of the water, it should be filtered or boiled before use. For country schools a driven or tubular well should be provided, which is preferable to a dug shallow well. The water of the well should be analyzed periodically both as to its chemical properties and as to the number of bacteria in the water. Water-buckets provided with drinking-cups which are dipped into the bucket are an abomination. The common drinking-cup often constitutes the vehicle for transmitting disease, such as tonsilitis or diphtheria. Where running water is available, the modern hygienic fountain with flowing jet is much to be preferred.

In every school there should be provided some wash-basins or sinks placed adjoining to the toilet-rooms, but not in the same. The use of these encourages habits of cleanliness and decency in the children.

School Baths. The advantages of school baths are so apparent that the movement towards providing them, which originated in Germany not many years ago, soon spread to this country, and now in many of our large cities they form a very important addition to the sanitary school equipment.

Swimming-pools intended largely for physical exercise and health improvement are expensive to construct and maintain, and require preliminary cleansing baths in the form of showers to guard against the now recognized danger of transmission of disease. Common tub-baths have many well known objections and, hence the only form which has merit for schools is the modern rain-bath. This form of bath is the cheapest in first cost and also

in maintenance; it is the one best adapted for schools because it requires very little room to fit up and uses only a limited quantity of water. Besides, it is without doubt the most sanitary form of bath.

School baths tend to educate children in bodily cleanliness and their favorable influence usually extends beyond the sphere of school life. One very important advantage derived from school baths is the much better ventilation secured in the class-rooms, because the once so prevalent so-called "school smell," arising from uncleanliness of body and clothing, is done away with. Children of public schools should be encouraged to take these baths, as experience shows that they interfere but little with the course of studies.

The construction and fitting up of the baths should be simple, but unusually strong and of well-wearing materials. The bath compartments may be arranged singly, or a room may be fitted up for the congregate bathing of a number of children. Where enclosures are used, partitions are constructed of slate, Alberene stone, marble or white opaque glass. The best form of douche is not the ring douche but the one which stands inclined under an angle so that the bather will not wet his head, except he places it purposely under the douche. The baths are usually located in the basement near the play or recreation rooms. This subject is discussed by the writer more in detail in a paper entitled "A Plea for Rain Baths in the Public Schools," presented at a meeting of the American Social Science Association, published in the *Journal of Social Science* for 1900.

Sewerage and Sewage Disposal. The quick removal of sewage from a school building and its subsequent disposal are of the greatest importance. In city schools, located on a sewered street, there is, as a rule, no difficulty in providing efficient sewerage, for unlike the modern tall office or hotel building, the school house need not have its cellar floor extend downward below the level of the sewer. There is hence no necessity of introducing complicated sewage pumping lifting machinery. The standard well-established rules on house drainage hold good for school plumbing and drainage and it does not seem necessary to go into the details.

For country schools the disposition of the sewage sometimes presents difficult problems. Two good general rules to follow are that common privy-vaults and leaching cesspools should be entirely prohibited, and that the use of any kind of cesspool should be avoided where possible. If no better system for the disposal of liquid wastes is available a water-tight cesspool built in two compartments and located in the farthest corner of the school lot may be adopted. In the case of smaller country school buildings it is advisable to restrict the inside plumbing work to a few wash-basins or sinks, and to provide outside detached pavilions with earth-closets. These should be closely watched in order to maintain them in a sanitary condition. Wherever plenty of grounds are available about the school-house the necessity of adopting the cesspool system rarely exists and better systems of sewage disposal are available. A purification system by surface disposal may often be successfully installed, but this should never be done at a distance less than 300 feet from a building. In other cases, sewage may be disposed of by the well-known "sub-surface irrigation" system. Finally, sewage may be purified and rendered innocuous by means of bacterial action, in septic tanks, in contact filter-beds, or preferably by a combination of the two systems. The use of these systems will render the sewage so well purified that the outflow from the filter-beds may be discharged into a ravine or into some available water-course without annoyance to sight or smell or without any appreciable contamination of the stream.

Maintenance of Cleanliness. The care of a school building is a matter of considerable sanitary importance. The class-rooms, the corridors, stairs and entrances and the toilet-rooms must be kept at all times scrupulously clean. This cleaning is generally entrusted to the school janitor, therefore the selection of an individual for the post of custodian of the school should be made with great care. Many so-called "janitors" lack the proper qualifications for their position, and be the school ever so well planned, constructed and equipped, its proper maintenance may suffer by reason of his incompetency. The work of the school janitor should always be directed by and be under the control of the school principal. The janitor should not be so burdened with duties that he cannot find sufficient time to attend to the cleaning of the school-house. In a large school the work of looking after the heating apparatus, the school baths, the toilet-rooms, the ventilating-plant and the general cleaning requires the time of more than one individual, and therefore sufficient help should be allowed to the janitor.

A school building requires daily cleaning and also a further, more extended periodical cleaning. The entrances, staircases, corridors and cloak-rooms receive a great amount of outside dirt brought in by the pupils and therefore they should be scrubbed and swept daily. The class-rooms likewise should receive a daily cleaning at the close of the school day. All windows in class-rooms should be opened for the airing of the rooms while the floors are swept. Dry sweeping and dusting is unsanitary and should never be permitted. Floors should be sprinkled with wet sawdust, or similar damp material, or swept with a wet broom or with rags or mops moistened in a disinfecting solution. The dusting of the school furniture, the desks and seats should be done with a damp dust-cloth. The toilet-rooms should be looked after and where their walls and floors are made of impervious and smooth materials, they should be washed each day with a hose.

The dust and dirt which accumulates in a school-house, and in particular in the class-rooms, may be the means of propagating contagious diseases. For this reason a periodical cleaning carried out more thoroughly is required in addition to the daily cleaning. At least once a week it is desirable to wash and clean the walls as well as the window-sills and the picture mouldings. The black boards also should receive attention and windows should be washed at least once a month and oftener if required.

During vacation time a much more thorough cleaning of the entire building should be arranged and it should comprise not only the cleaning and washing of walls and floors with hot water and soap, but also a disinfection of the premises. This disinfection should include the class-rooms and the warm-air flues of the heating apparatus, also the cold-air receiving chamber and the air-filtering room. The books and the pencils used in class-rooms should be disinfected at least four times a year by means of formaline disinfection, and the floors and baseboards, desks and seats should be also washed with a disinfecting solution. The wardrobes which accumulate considerable outside dirt should receive due attention. Some of this dirt may be prevented by providing near the entrances shoe-scrapers for the cleaning of the shoes. Teachers should always strictly enforce the rule that no spitting on the floors should be permitted.

Sanitary Inspections and Tests of Plumbing. The plumbing of a school, even when confined to the toilet-rooms, should be absolutely tight, and there should be at no time any escape of sewer-air. To make sure of this it is necessary that the building be tested and inspected periodically by disinterested professional advisers. The form of inspection and the tests applied do not vary from those used in the sanitary examination of other classes of buildings. It is well, however, to emphasize the fact that a sanitary inspection should include not only the plumbing and sewerage, but also the condition of cleanliness maintained in the class-rooms, cloak-rooms, basement and in the school yards.

WM. PAUL GERHARD.

THE MONUMENTAL TREATMENT OF BRONZE.[1]—II

THE time remaining at my disposal must be given up to a form of monument which was practically never known in England, and the high symbolic import of which is even yet scarcely appreciated.

When not only palaces and pleasaunces, but every edifice, sacred or lay, and every city, was closed with defensible and well-night impregnable gates, the question as to whether these would be found open or shut must have been of the most momentous. The hope of the night's shelter, warmth, and food hung upon the contingency, and oft the traveler must have been met with the stern rebuke, "Too late, too late; you cannot enter now." Inevitably the imagination fenced in the places to be desired in a future life with gates, inexorably closed except to the favored few. The keys of the gates of Heaven or Paradise were committed to St. Peter, rarely to be opened to any one without intercession, but the gates of Hell and Purgatory gaped wide. Open or shut, gates were the focus of interest, and could not be approached in primitive days without awe, curiosity, or emotion. It is hence not surprising that they were sumptuously and magnificently decorated. The Roman triumphal arch was only the apotheosis of the gate, recalling difficulties gloriously overcome. The question, figuratively, of the open or closed

[1] A paper by Mr. J. Starkie Gardner, F.S.A., read before the Society of Arts and published in the *Journal* of the Society.

door to commerce is almost the only one about which civilized nations might still go to war.

In the days when iron was little used, the massive wooden doors were sheathed, for protection from fire and for strength, in bronze, and revolved upon massive bronze hinges. Upon these were sometimes pictured the mighty deeds of the monarch of the country. The bronze portions of two pairs of enormous doors were found many years since by Mr. Harmuzd Rassam in excavating at Balawat in Assyria. The city contained a palace standing in a long rectangular enclosure, with four entrances, near two of which the remains of the doors were found. The larger were about 22 ft. high, 6 ft. wide, and 3 inches thick, each leaf being attached to a cylindrical post, about 18 inches in diameter, to which strong bronze pivots were fixed, working in stone sockets. Across each door seven or eight plates of bronze 11 inches wide were fixed by nails at regular intervals, these plates lapping round the post. On each of these plates are representations of the Assyrian army on its war-path, and other events of the first nine years of the reign of Shalmaneser II. These are in two bands of repoussé work, executed with great fidelity and spirit, and much freedom of drawing. Between embossed bands narrow spaces are left, relieved at regular intervals with the rosettes through which the nails are passed that fixed the plates to the woodwork of the doors. The "brazen gates" of antiquity were probably of this kind, and we are singularly fortunate in the possession of these splendid examples by our national museum.

Of the Roman period, there are several bronze doors, but of a different type and not depending on wood for their construction, still preserved in Rome itself. These are the large central doors of St. John Lateran, decorated with foliage, and brought from the Æmilian Temple in the Forum, and of about the date of Our Lord. Another pair, brought from the Baths of Caracalla, and of about the third century, close the oratory of St. John the Baptist, in the church of S. Giovanni in Fonte, the ancient baptistery in Rome. The vast bronze doors of the Pantheon remain in their original position, dating possibly from the time of Agrippa, 31 B. C. The doorway of marble, 39 feet high and 19 feet wide, contains their massive framing, consisting of two bronze pilasters, to which the doors are hinged, and the lintel over them is a pierced bronze scale-pattern grille. The doors themselves are not decorated in relief, but are of severe and dignified simplicity.

Next in point of antiquity are the Byzantine gates which revert to the partly wood construction of the East. Examples of these still exist in Constantinople, but the best known are the bronze doors to the vestibule of St. Mark's, in Venice. Some of these were brought from Constantinople, it is supposed from S. Sophia, after its reconstruction by Justinian, and may date back to the sixth century. Three of the oldest are divided into four panels of double arches with crosses and foliage rising out of vases under each arch. The other two are in the later Byzantine style, the central one, of early eleventh century, divided into forty-two framed panels inlaid with figures of saints in silver, the heads of some in relief, and a lower row of six panels decorated with bosses only. The frames are broad and studded with bossed nails, and twisted pillars separate each row of panels vertically. The remaining door is treated similarly, but divided into twenty-eight panels with figures, and is older, since the inscriptions are in Greek characters. The framing of the panels are richly decorated with geometric and florid designs, and there is a central row of six lions' heads among the bosses. In the large central doors these are replaced by a row of eight lions' heads with rings, and the inscriptions identifying the prophets and saints are in Roman characters.

Next in age are the principal doors from the venerable Abbey Church of Monte Cassino, executed by order of Abbot Desiderio, later Pope Vittorio III., 1088. They also are inlaid with silver curiously reciting a list of the properties held by the Abbey in 1066. The crosses at the base are like those of the earlier doors of St. Mark's. The Cathedral at Amalfi has doors similarly ornamented; and the doors of the Cathedral at Salerno, erected by Robert Guiscard, are also inlaid with silver, and were executed at Constantinople in 1099. Other examples exist.

The central doors of the Cathedral of Benevento[1] are divided into seventy-two panels, filled with bas-reliefs, except four containing lions' heads with ring handles. Those above represent scriptural scenes crowded with figures, and below are single saints under simple canopies. The framing is made of egg-and-tongue moulding, with large rosettes at the intersections. They are supposed to have been made in Constantinople in 1150.

There are exceedingly interesting bronze doors at Canosa closing the Mausoleum of Boemond, the son of Robert Guiscard: portions of the cathedral doors of Susa, of Byzantine eleventh century work, are preserved in the treasury of that cathedral.

Bronze doors of Italian make first appear in the twelfth century, the earliest artist of whom we have definite records being Barisano da Trani. The bronze doors to Trani cathedral, made in 1160, are his work, and are divided into thirty-two panels of subjects in relief with rich scrolled borderings, and mounted on hard wood. The side doors of Monreale[1] are by the same artist, but somewhat later, divided into twenty-eight panels with reliefs and excessively rich borderings. Even finer are the doors of the Cathedral of St. Pantaleone, at Ravello, by the same artist, and produced in 1179. The figures are very varied and of some merit, considering the date, and constitute a landmark in the history of Italian art. Equally celebrated for bronze work is Bonanno da Pisa, who produced the great central doors of Monreale[1] in 1186. The entrance is arched and richly sculptured, and the doors are divided into forty small panels, with scriptural subjects in relief, and in plain frames studded with rosettes, and separated vertically by bands of acanthus foliage treated conventionally. At the base are two lions and two griffins, and above are enthroned the Savior and the Madonna with angels. To the same artist we owe the doors of the Baptistery[1] at Pisa, less important as to size, but more delicate in design and workmanship. To the last year of the thirteenth century belong the well-known open-work scale-pattern doors of St. Mark's, Venice, inscribed "MCCC + Magister Bertucius Aurifex Venetus me fecit +." The details of these are noteworthy.

The doors of St. Zeno Maggiore[1] at Verona are in the Italian style, but have been assigned to an unknown German artist, who produced them in 1178. They comprise forty-eight panels with scriptural subjects in relief and two with large heads, serving as knockers or closing rings. They betray a slight tendency to the grotesque, but the architectural details seen in the panels are of great interest, suggesting an Italian source.

With the appearance of Andrea Pisano in the fourteenth century, we reach more familiar ground. He was commissioned in 1311 to make the doors[1] to the baptistery of the cathedral in Florence, designed by Giotto, being regarded as the best artist for the purpose to be found in all Italy. They occupied 22 years, notwithstanding the assistance of his son and two fellow artists, Lippo Dini and Piero di Jacopo, and were cast in Venice by Master Leonardo del Avanzo, and finally gilded by fire in 1339. They were shifted from the northern entrance to make way for the gates by Ghiberti, and re-erected at the south. They consist of twenty-eight panels with scenes from the life of the Baptist in relief, placed in barbed quatrefoils with rectangular moulded framing, studded with bosses and lion heads in relief. When they were set up the Signory came in solemn state to applaud the artist and confer on him the dignity of citizenship. The architrave was added by Ghiberti, who made a corresponding pair of doors, for the northern entrance, in 1403, when he was but 22. These occupied 21 years, though many assistants were employed, including his father-in-law, Bartoluccio, a great silversmith. They weighed 34,000 pounds, and cost 16,204 florins. Founded on the work of Andrea Pisano, they nevertheless show marked progress in Italian art. In 1425 the same Lorenzo Ghiberti was commissioned to execute the central doors,[1] spoken of by Michael Angelo as worthy to be the gates of Paradise. They mark an entirely new departure, a striving for pictorial effects, to an extent never before attempted. Ghiberti has left on record that he "strove to imitate nature to the utmost, and by investigating her methods of work to see how nearly I could approach her. I sought to understand how forms strike upon the eye, and how the theoretic part of sculptural and pictorial

[1]See THE AMERICAN ARCHITECT for Dec. 13, 1902.

art should be managed. Working with the utmost diligence and care, I introduced into some of my compositions as many as a hundred figures, which I modeled upon different planes, so that those nearest the eye might appear larger, and those more remote smaller in proportion." Perhaps the novelty led to the somewhat exaggerated praise. The founding was commenced in 1440 and completed in 1452 at a total expense of 14,594 florins. They thus occupied 27 years, or, according to Vasari, 40! The scenes are from the Old Testament, and fill the ten panels. The framing comprises twenty statuettes in niches and four recumbent figures, and twenty-four heads in the highest relief, among them one of the sculptor himself. The framing of the doorway, also of bronze, comprises foliage, fruit, flowers, and numerous animals and birds, all in high relief.

Florence also boasts two small pairs of doors by Donatello for the sacristies of the Church of S. Lorenzo, with ten panels in relief of saints and martyrs. These were produced in about 1457, eleven years before his death. There are also bronze doors to the sacristy of the cathedral by Luca della Robbia, executed in 1464, comprising ten panels of subjects in high relief, which have almost the finish of silverwork, and were highly commended by Vasari.

A pair of magnificent bronze doors were cast for the Triumphal Arch of the Castel Nuovo at Naples, erected by Pietro di Martino for Alfonzo of Aragon to commemorate his entry into the city in 1443. They occupied 19 years, not being finished until after his death—a grief to a prince known as the Magnanimous, and a great patron of art. Guglielmo lo Monaco of Umbria completed the work in 1465. They are divided into six large panels, the two uppermost forming segments of an arch, all crowded with figures of mounted men-at-arms in battle array, with citadels in perspective in the background.

The art of bronze-founding had, no doubt, attained its zenith in Italy in the fifteenth century, yet to the sixteenth belongs the superb door to the sacristy of St. Mark's, Venice, by Jacopo Sansovino, produced about 1529, when he was appointed architect and sculptor to the Venetian Republic. It is divided into two panels, with scenes from the life of Christ, bordered in the manner of the later Ghiberti gates, the portraits being, however, of great interest, since they are those of himself, Titian, Aretino, Paul Veronese, Giorgione, and Tintoretto.

The front of the cathedral at Loreto has three pairs of most sumptuous doors, the central by Girolamo Lombardi, of Ferrara, and his sons, who worked on them from 1534 to 1560. They comprise six large and eight smaller panels, illustrating the story of Adam and Eve, with richly worked borders. The left-hand doors are by Tiburzio Verzelli da Camerino, of somewhat later date, but corresponding generally in design, and those on the right by Antonio Calcagni, each having employed several assistants.

The seventeenth century produced the three magnificent doors[1] to the Cathedral at Pisa, by John of Bologna, executed in 1602, evidently inspired by the later door of Ghiberti in Florence. The principal panels represent scenes from the life of the Virgin, and the borders comprise branches of laurel and of orange, roses, figures, etc., with a considerable tendency to realism. He employed several assistants.

The bronze gates of the Campanile Loggia in Venice, to our taste, perhaps, want repose, but comprise some fine modeling. Gates of this sort are almost confined to Italy, and few exist anywhere wholly of bronze, unless closing an arch or entrance. Little appears to be known of the artist—Antonio Gai.

It may have been noticed that the doors were originally modeled on the lines of the strongest form of wooden doors known, and the interspaces occupied by the panels are therefore necessarily reduced to very small dimensions. Ghiberti was the first to abandon the strongly constructional form and introduce larger panels, and these were generally adopted, until in the doors at Naples there are only three panels to each leaf.

In England we have rarely since mediaeval days, when splendid iron-work was laced over doors to give them strength, been conscious of the decorative value of metal for doors, though the Italian artists had for centuries lavished their finest work upon them, and many were famous chefs d'oeuvre. The oldest bronze gates we have close the entrance to Blenheim Palace. In London there are bronze gates closing both the Marble and Wellington arches, and there is a pair in the central arch to Buckingham Palace. Those for the Marble Arch cost 3,000 guineas.

There are many occasions when relatively small sums are available for commemoration, and many sites where beautiful gates, whether of iron or bronze, would add greatly to the importance and dignity of the scene. Memorial gates can be and are produced at from £60 to several hundred pounds, in iron, and I have plans before me for bronze gates running into thousands. When these are executed it may be interesting to describe the process of manufacture from the commencement. A very fine pair of bronze doors for a Liverpool bank is illustrated in the "Encyclopaedia Britannica," under Art Metal Work.

A FEW REMARKS ON FOUNDATIONS.[1]

IN studying foundations for heavy concentrated loads, the writer has observed the effects of such loads upon existing structures. In such cases, where defects soon appeared, one could easily trace their causes. Where such defects arise from the use of poor stone or mortar, they are not worth considering; but there are many cases, where such defects appear, in which both stone and mortar seem to be excellent. In such cases it is evident that the question of distribution must be examined.

Sometimes a heavy and heavily loaded column is found resting on a foot-box made up of plates riveted to the bottom of the columns with angles riveted to the lower edges of these plates, and then a horizontal plate having an area of seven or eight times the area of the cross-section of the column, and supposed to distribute the pressure over the area covered by the plate. This is an extreme case, and does not occur as often of late years as it did earlier; but there have been cases, within a few years, where a heavily loaded column rested on a casting so shallow that it could not nearly distribute its load over the whole area of the base of the casting.

The writer has in mind one case in which a heavy column rested on a casting, and the casting rested on a large nest of rollers. The outer ends of all the rollers and the outer rollers at each end of the bed were not borne upon at all. It is not easy to distribute enormous concentration of weight over a sufficiently large area to give the proper unit pressure over the whole area; but this should be done, and it requires geater height in proportion to the base of the bed than is in many cases given.

Having properly proportioned the foot of the column, attention must next be given to the masonry pedestal on which it is to rest. Supposing the bed-plate to distribute practically its whole load over its entire area equally. The question will arise as to how far outside of the bed-plate the stone of the pedestal can project (not only advantageously, but with safety), in the top course, below the coping, and how far it can go without absolute detriment to the work. If it is extended more than about 2 inches per foot of thickness of the course, no perceptible advantage will be gained. Of course, it must project sufficiently to keep the pressure per square foot within proper limits, including the weight of the masonry, and the wind pressure, and, if it is to rest on concrete, to keep the pressure on the concrete within proper limits.

The difficulty, with trying to extend the masonry too far beyond the bed-plate, is that the stone may crack, and, if so, it will start under the edge of the bed-plate, and the crack may incline still further under the bed-plate at the bottom of the course. Moreover, with too large a mass of masonry, there is a tendency to put the best masonry outside, and a poorer quality within. In this case the poorest masonry sustains the load. This is similar to making the pedestal of a bag filled with sand. In this case the bag will be pretty sure to burst, whether made of cloth or masonry.

Fig. 1 represents two courses made of cut stone, with ½-inch joints. This form secures excellent bonds, and from it the writer has obtained excellent results.

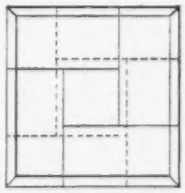

FIG. 1.

Where four or more heavily laden columns rest on one foundation, the writer thinks it is best to have the center of pressure on each column so nearly placed that the distance between each pair of columns, each way, shall be about equal to the sum of the distances of the extension of the masonry outside of the columns, and then build the pier in such a manner that there shall be a pedestal of first-class masonry under each column,

[1] A paper by Mr. L. L. Buck, M. Am. Soc. C. E., presented May 3, 1905, and published in the *Journal* of the Society.

similar to that of the single-column foundation. But the pedestals must be bonded to whatever masonry is outside of or between these pedestals.

In some cases, where the load on one column is very great, a casting, in order to distribute its load properly over the whole area of its base, must either be as high as the length of the base, or the casting must be in several pieces bolted together for convenience in handling. In this case the bottom length of the column can be given such a taper that its lower end will cover a space equal to half the area of the base of the casting, when the casting will require only about half the height required in the other case. Of course, the casting, in both cases, must be thoroughly ribbed. There are other ways of accomplishing this result, but it is doubtful if, on the score of economy, they are any better.

In the case of heavy walls having frequent window openings, one will sometimes find them showing disagreeable cracks, similar to those indicated in Fig. 2.

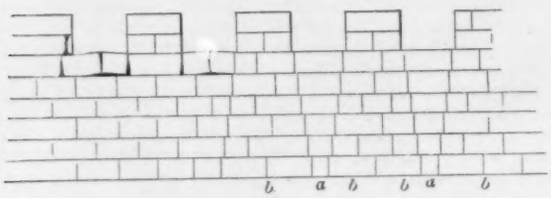

FIG. 2.

This trouble might have been avoided by a form of construction similar to the right-hand portion of the diagram. Construct the area of *b* so that the area of its base, in proportion to that of *a* shall be equal to that of the weights they respectively sustain.

The whole idea is to use the pedestal form, and not to project the stones under the heavily loaded portions more than the transverse strength of the stone will safely sustain.

ILLUSTRATIONS

FLUSHING BRANCH: QUEEN'S BOROUGH PURLIC LIBRARY, FLUSHING, LONG ISLAND, N. Y. MESSRS. LORD & HEWLETT, ARCHITECTS, NEW YORK, N. Y.

INTERIOR OF THE CHURCH OF ST. PATRICK, ELVEDEN, ENGLAND. MR. W. D. CAROE, ARCHITECT.

This drawing, which is here reproduced from the *British Architect*, was hung at this year's Royal Academy Exhibition.

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BASEMENT FLOOR PLAN OF THE SAME.

DETAILS OF THE SAME.

LONGITUDINAL SECTION OF THE SAME.

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NOTES AND CLIPPINGS.

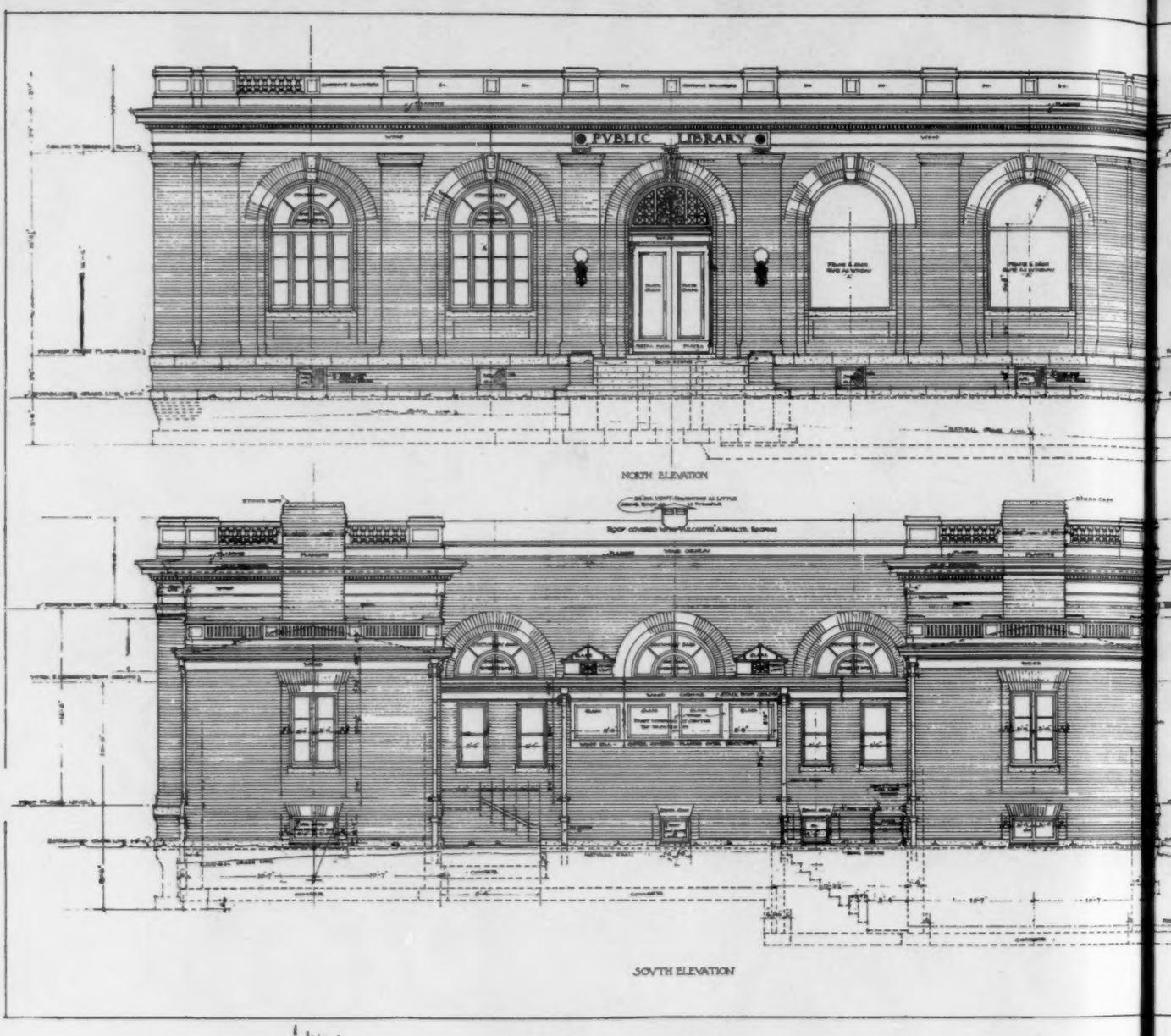
FAILURES IN HOUSE-LIGHTING.—Although much progress has been made in recent years in the development of various types of electric lamps, the art of electric lighting, says the *Electrical Magazine*, in so far as this art applies to the proper amount and distribution of light for the illumination of interiors, has not kept pace wth the development of the lamps themselves. The electric engineer may be skilled in designing electric-light plants, but when it comes to laying out the detailed lighting scheme of a house, he is apt to fall short for the reason that his training does not, as a rule, qualify him to obtain the best results in this particular field. As a matter of fact, it is often the architect, rather than the electrical engineer, who decides the lighting problem and prescribes the location of outlets for lamps. Sometimes the decorator may be called upon to arrange the lighting scheme, and even the fixture manufacturer often has a hand in the matter. Lastly, the owner himself may suggest certain arrangements, which though ridiculously extravagant are carried out because no one in particular has direct charge of the whole question of illumination. This condition of affairs accounts for the glaring defects in lighting which are noticeable in most residences at the present time. Unshaded or inadequately shaded lamps, hung low in the rooms, are the rule rather than the exception. Lights so hung are exceedingly trying on the eyes, and are directly responsible for many a case of nervous headache arising from irritation of the eyes. On the other hand, one often sees just the other extreme—that is to say, lamps so densely shaded that only a very small percentage of the light is useful. Sometimes this shading is done for æsthetic reasons, but in many cases it is done at the cost of both art and illumination. The question of electric illumination has grown too broad to be properly handled by the electrical engineer as such, or by the architect. The problems that present themselves for solution are numerous and more or less complex, and demand the attention of a specialist in illumination—the illuminating engineer, for whom the field is growing year by year.

CALCIUM CARBIDE AS AN EXPLOSIVE.—According to M. P. S. Guédras (*Comptes Rendus, 1904*), calcium carbide is introduced into a metallic cartridge, separated by a diaphragm from the necessary water for its decomposition; the cartridge also contains an air-space and a cavity having the detonator. The cartridge is introduced into the bore-hole, which is tamped with a wooden plug, and by striking a projecting rod the diaphragm is pierced. After five minutes the cartridge is exploded by firing the detonator. The rock is shattered, but not projected, and can be easily hewn with a pick. The charge of carbide is 50 grammes.

NEW AZTEC FINDS IN THE CITY OF MEXICO.—Laborers, excavating trenches for the underground cable system of the telephone company near Cinco de Mayo-st., have, this month, uncovered a number of clay utensils, concrete foundations of temples, and pottery covered with hieroglyphs, also Spanish coins, whose dates are undecipherable, but induce the supposition that the antiquities belong to periods of the conquest, when Cortez razed every building in the Aztec capital. A wall uncovered shows evidence of having been built on the ruins of another city lower down. The wall is covered with hieroglyphs which were partly effaced by the drilling of conduit holes through the solid mass. Professor Batres is eager to obtain governmental permission to excavate below the present level for older remains, which, he is satisfied, exist underneath.—*N. Y. Tribune.*

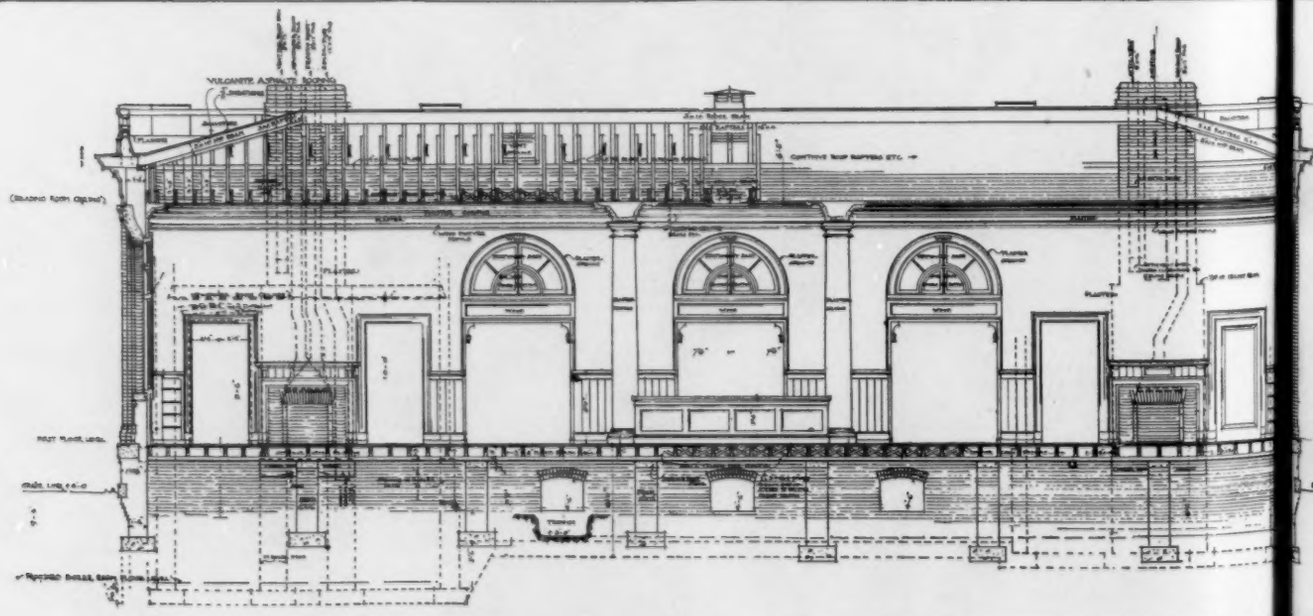
COMPLETION OF THE BRONZE DOORS OF THE U. S. CAPITOL.—The great bronze doors which are to be placed at the entrance to the House wing of the Capitol at Washington have at last been completed in the workshop of M. H. Mosman, at Chicopee, Mass., after a delay of many years. They will be shipped to Washington in a couple of weeks. Work on the doors was first begun by Thomas Crawford, who designed them, in 1858. The modeling was finished by William H. Rinehart in 1862, and the models were shipped to the Treasury Department in Washington, where they remained until two years ago, when the contract for casting them was placed with Mr. Mosman. The cost of casting is $45,000. Mr. Crawford, who began the designing of the doors in Rome, as soon as he had completed the models for the Senate doors, is perhaps best known for his statue of "The Genius of America," which is of colossal size and is placed on the dome of the Capitol. He died before he could complete the designs for the House doors, and his work was carried out by Mr. Rinehart, another American sculptor working in Rome. The doors are fourteen feet high and weigh two tons. With the frame in which they hang they weigh seven tons. Each door is divided into five panels, the upper one in each being a grille, and the four others in each representing in bas-relief design different scenes of the struggle for American independence. The upper historical panel in the left-hand door represents the massacre of Wyoming. The next shows the battle or Lexington. The third represents the presentation of a flag to Colonel William Moultrie. The lowest depicts the death of General Richard Montgomery and the New Year's Eve attack on Quebec in 1775. The topmost historical panel on the right-hand door is the Crawford-Rinehart conception of the Treaty of Paris, with Benjamin Franklin in the foreground seated at a table, and in the background John Jay and English representatives. The next represents Washington's farewell to his generals, and the lowest is a representation of Benjamin Franklin with a manuscript, a book and a miniature printing-press.—*N. Y. Tribune.*

ROYAL ACADEMY EXHIBITION, 1905



NORTH ELEVATION

SOUTH ELEVATION



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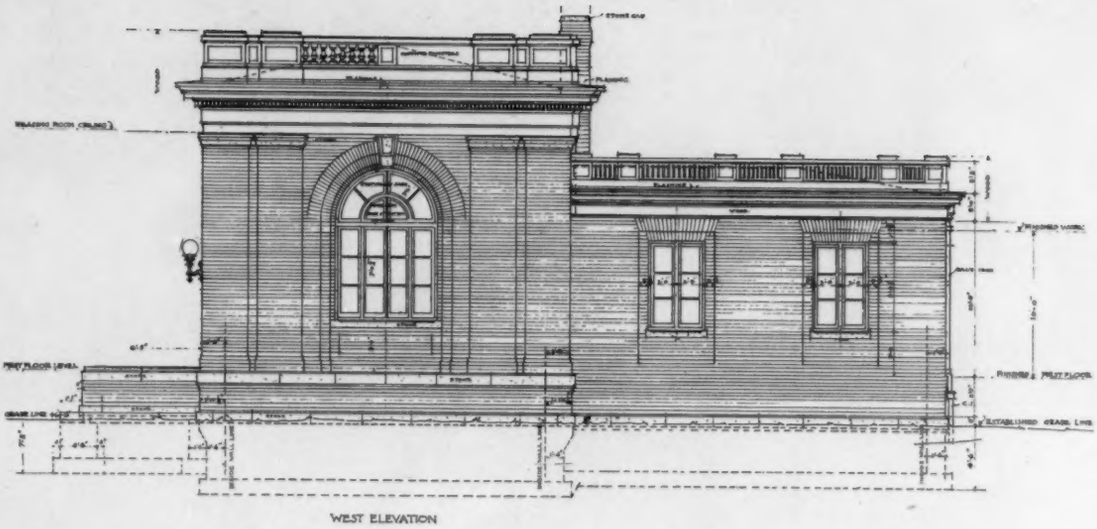

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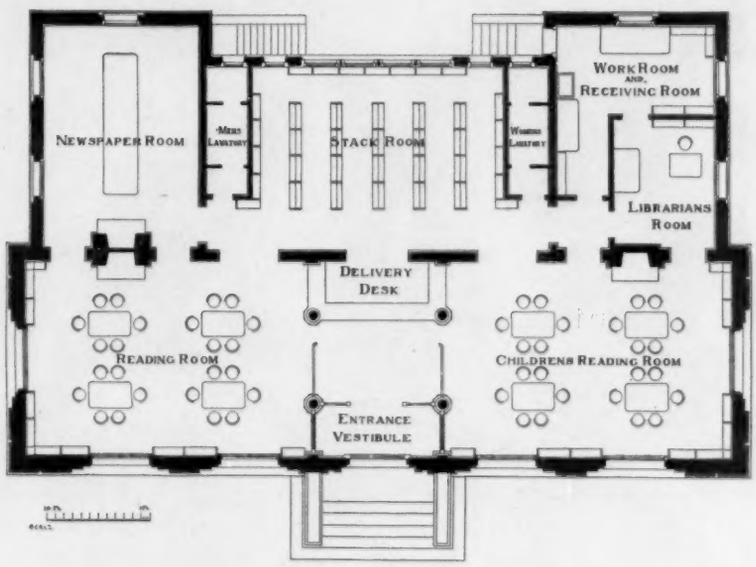

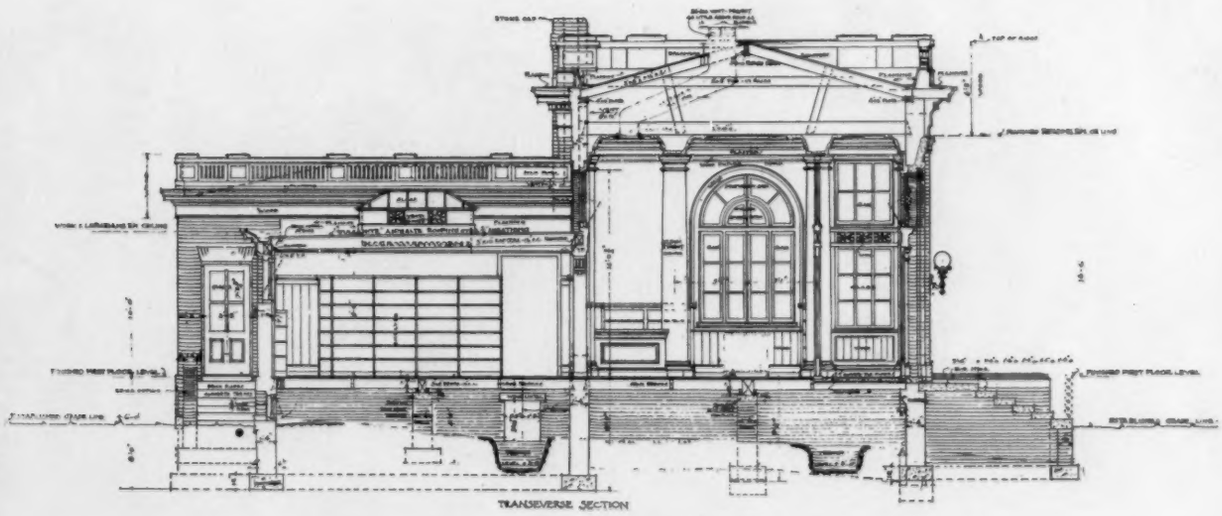

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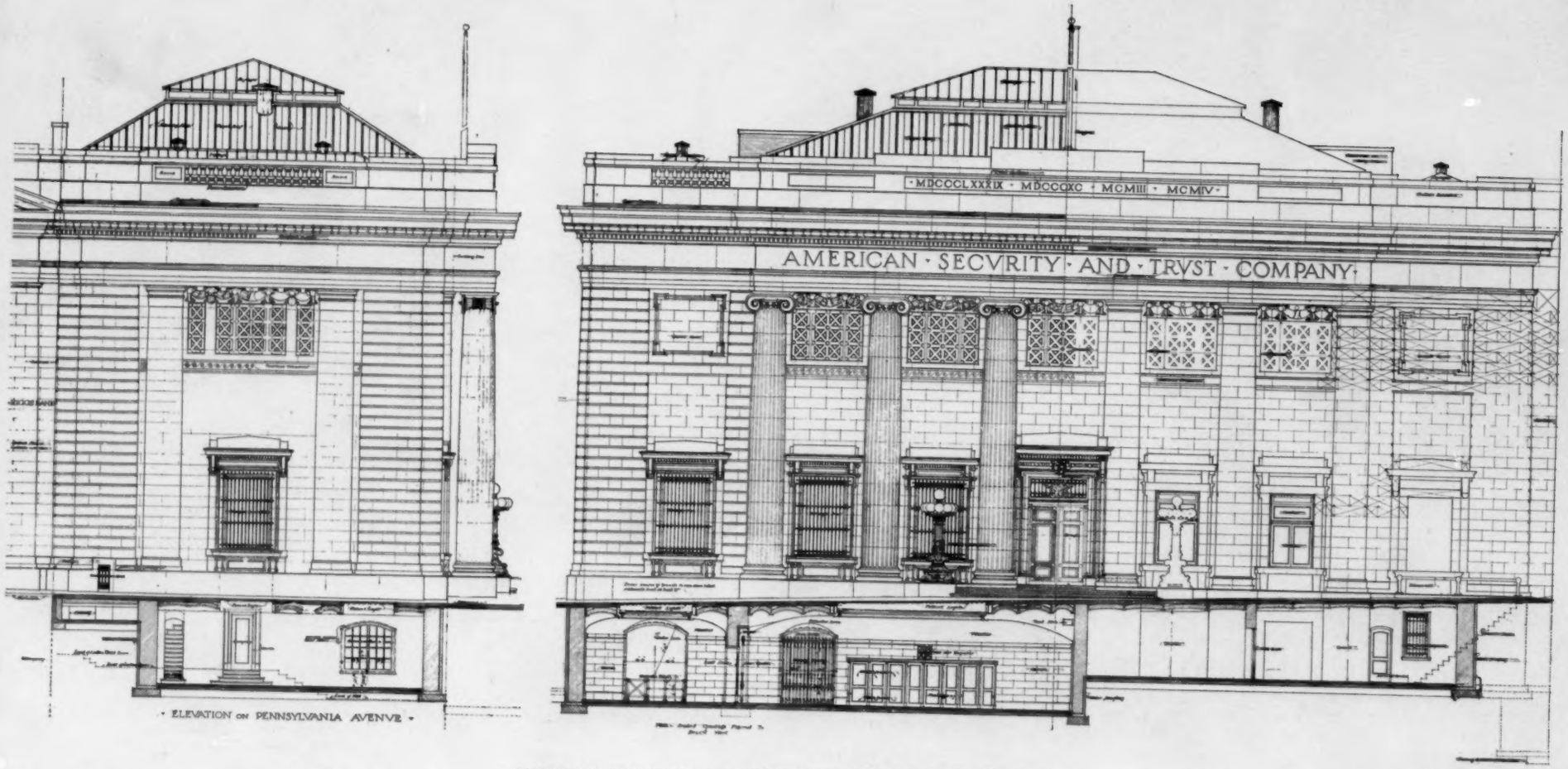

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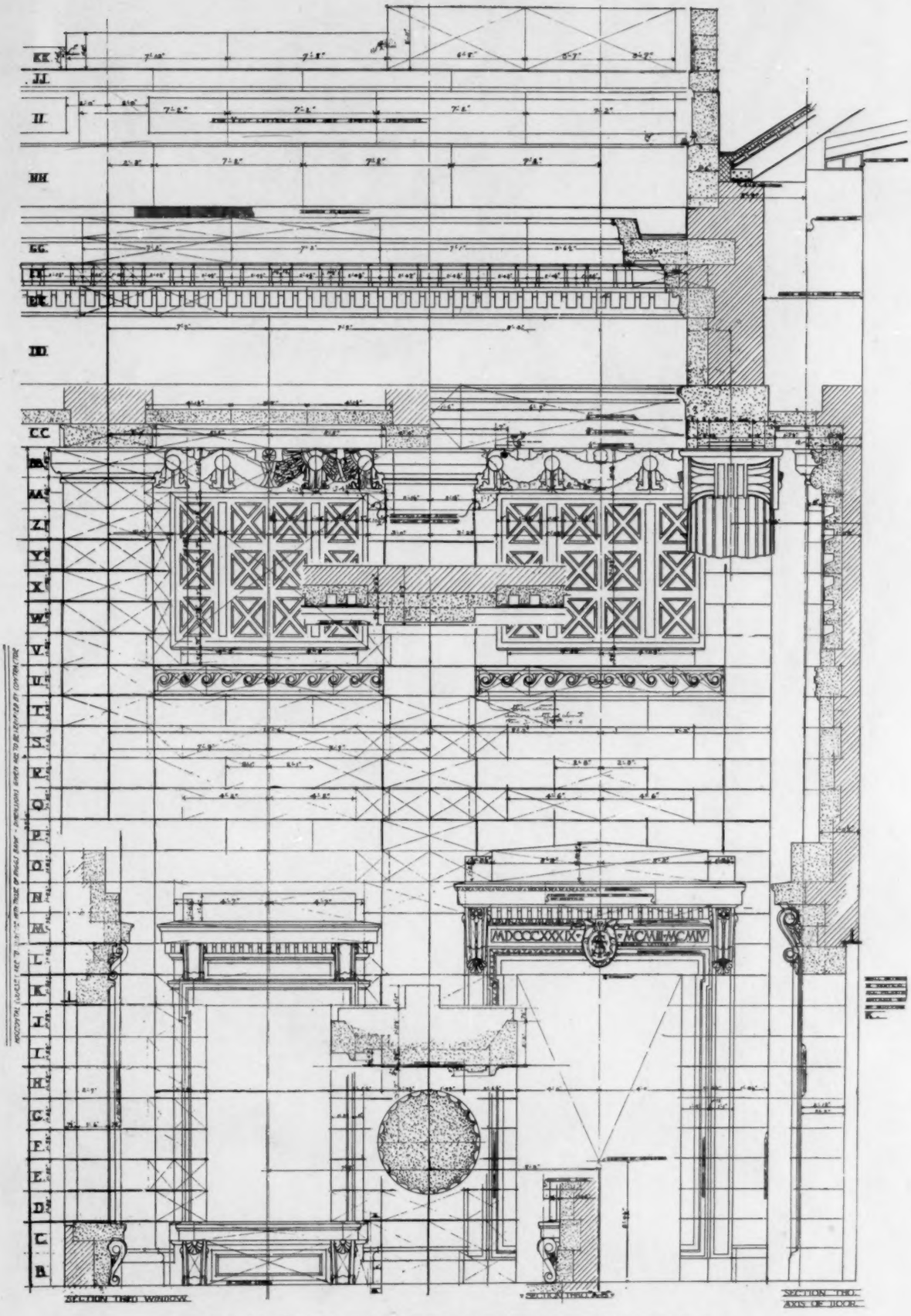

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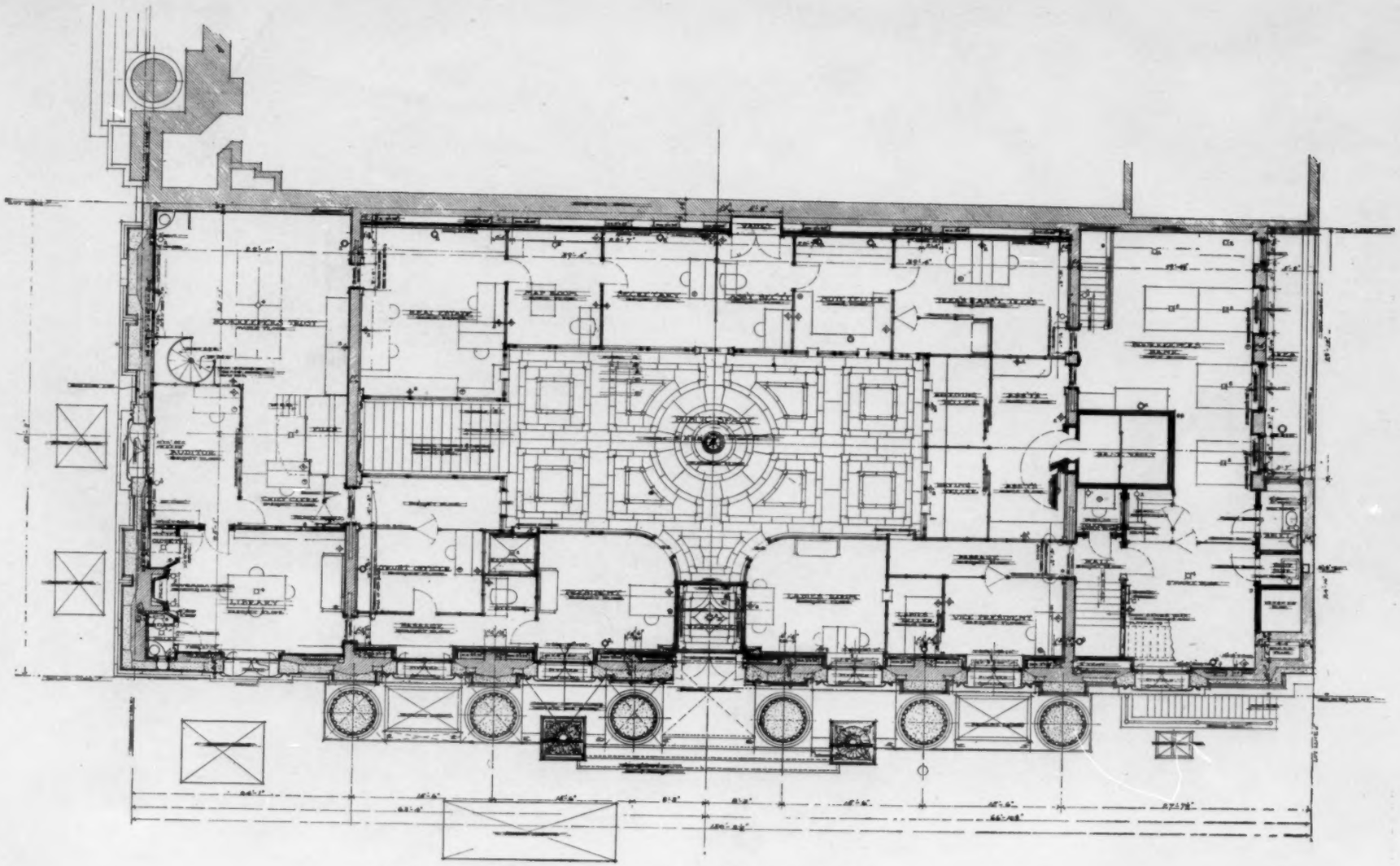

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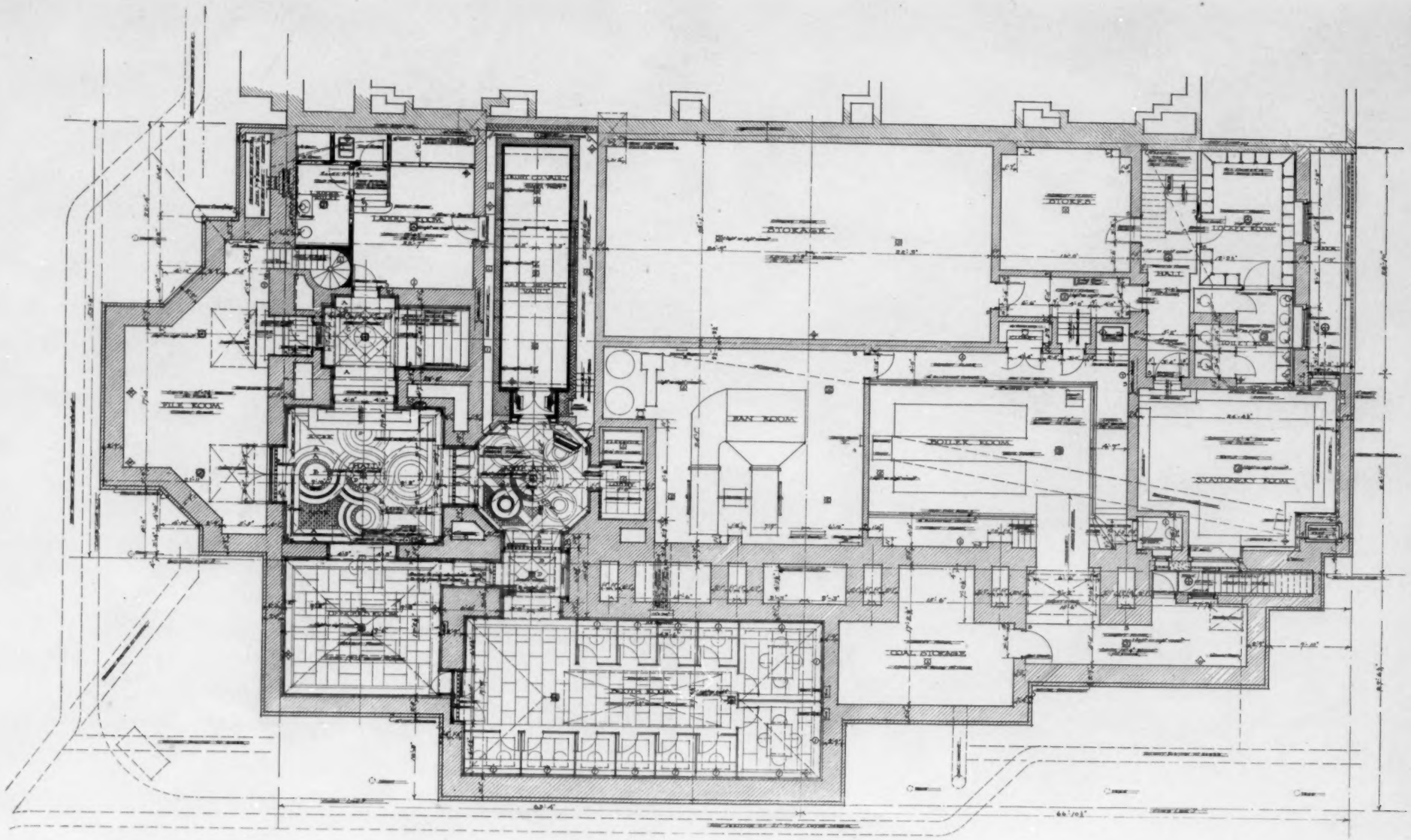

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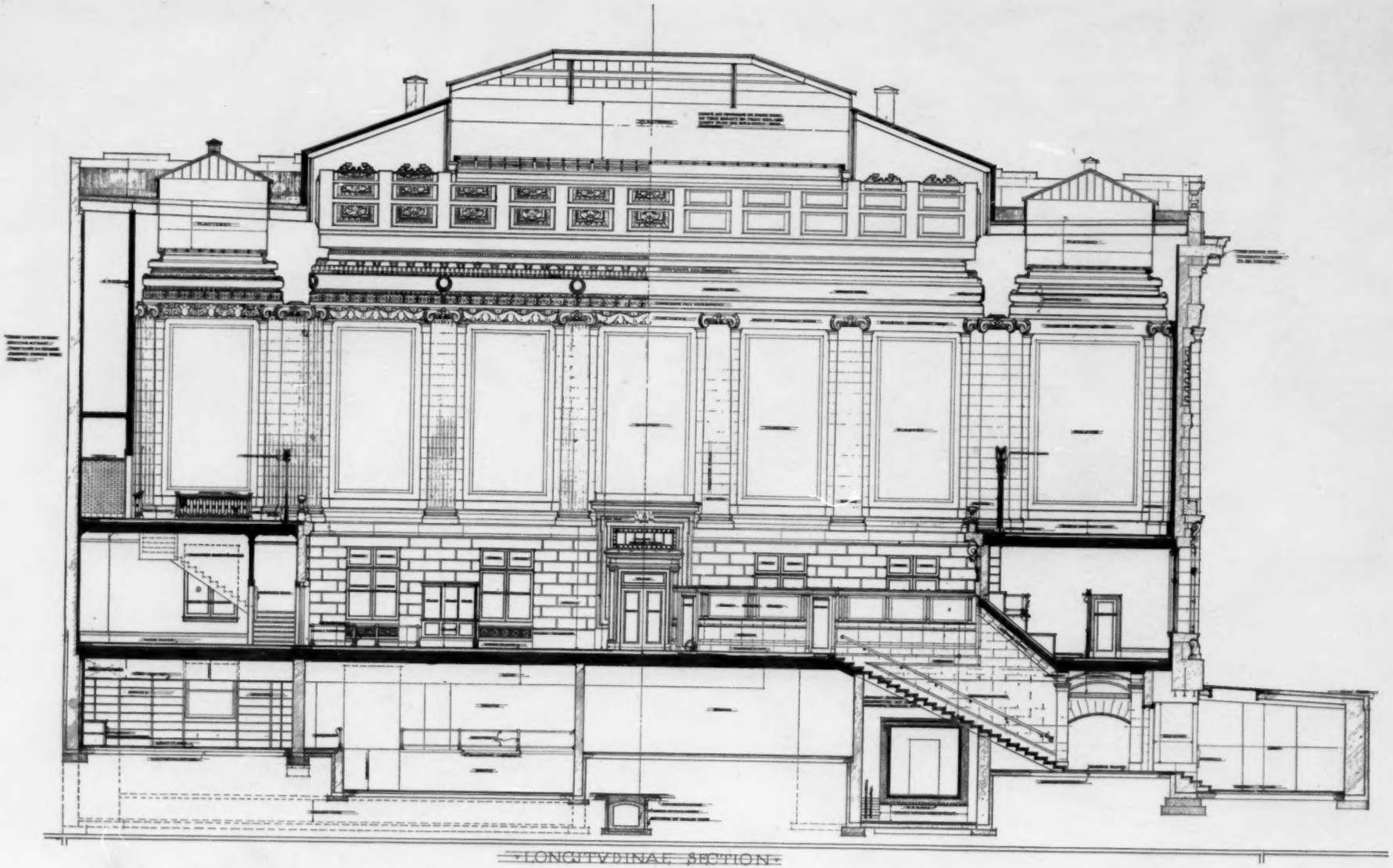

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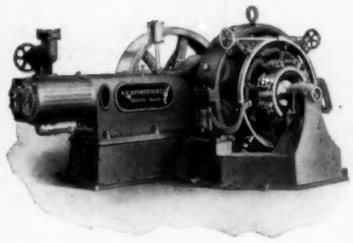

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PROPOSALS.

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 24th, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 14th day of June, 1905, and then opened, for the installation of an electric passenger elevator and an electric dumb waiter, in the U. S. Marine Hospital Building, at Savannah, Georgia, in accordance with the drawings and specification, copies of which may be obtained at this office, at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
(1536-1537)

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 27, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 20th day of July, 1905, and then opened, for the construction of the U. S. Custom House at San Francisco, California, in accordance with the drawings and specification, copies of which may be had at this office or at the office of Messrs. Eames and Young, 711 Lincoln Trust Building, St. Louis, Mo., and at the office of the Superintendent of Construction of the U. S. Post Office, Court House, etc., at San Francisco, California, at the discretion of the Supervising Architect. Applications must be accompanied by a certified check for $200.00, the proceeds of which will be held at this office until the return of the drawings and specification. JAMES KNOX TAYLOR, Supervising Architect.
(1536-1537)

Treasury Department, Office of the Supervising Architect, Washington, D. C., May 31st, 1905.—Sealed proposals will be received at this office until 3 o'clock P. M., on the 27th day of June, 1905, and then opened, for furnishing the steam heating apparatus complete in place, for the U. S. Post Office and Court House, etc., at Grand Forks, N.D., in accordance with drawings and specification, copies of which may be had at this office, or at the office of the Superintendent at Grand Forks, N. D., at the discretion of the Supervising Architect. JAMES KNOX TAYLOR, Supervising Architect.
(1537-1538)

NOTES AND CLIPPINGS.

Continued from page ix.

lamps; and although these lamps do not give rise to sulphur compounds, they do generate ozone and oxides of nitrogen, which are calculated to act injuriously on pictures. In order that this advantage may accrue from the incandescent gas illumination, it is, of course, necessary that proper ventilation should be provided over the gas burners to prevent the circulation of the products of combustion.

In the discussion which followed the reading of this paper an electrician, naturally in opposition, said he did not think very much of the experiments, for the incandescent-gas lamps in the Birmingham Art Gallery had funnels above them to carry away the fumes, and considering that five gas-burners consume as much oxygen as ten human beings, he thought it was very easily seen that ventilation was needed when gas lamps were used. A Mr. Balence then said that he was surprised by the statement that in a room lighted by electricity there would be more carbonic acid than in one lighted by gas, and personally he preferred electric light for dwellings, though with ventilating shafts for gas-burners there might be more perfect ventilation.

Mr. Tucker had referred incidentally to the question of lighting in fog, giving his experience on certain roads during a recent fog visitation. On one road lighted by electric arcs placed pretty close together he found that he could not see one lamp from another, and pedestrians ran considerable risks, but when he reached a road in which incandescent gas lamps were employed he found things much better, for he could see two lamps at a time. In the discussion a number of persons present said they had often noticed the want of penetration of electric light in fog, and one thought electric light in the time of fog perfectly useless. A Mr. Manning said that when he visited Paris lately he had contrasted the lighting by electricity in one avenue there with that by gas in another, and that there was far more light from the incandescent-gas lamps than from the electric lamps.

Touching on the fog question, I may say

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that there is an American acetylene lamp on the English market in which the flames from two burners impinging give a very perfect white light, and the only criticism of this lamp is that some users have claimed that in fog this perfect light is not so effective as that from certain English and Continental lamps, in which there is not so perfect combustion and the light is of a yellowish color; but the American maker can easily fix a device to his lamp which will enable the user to have a yellow light when needed for fog.—*Marshal Halstead, U. S. Consul, Birmingham, Eng.*

BUILDING NEWS.

(The editors greatly desire to receive information from the smaller and outlying towns as well as from the larger cities.)

Afton, Iowa.—The Commercial Club has offered to raise the sum of $50,000 to be used in the erection of a main building for Palmer College, provided the trustees will remove the college from its present location at Le Grand to this place. It is confidently predicted that the offer will be accepted.

Aberdeen, S. D.—The Great Northern Railroad has just purchased property for $30,000, in the vicinity of its present terminal, and the rumor is general that the company is about to erect a $100,000 passenger station, freight depot and railway hotel. The same road is also planning to erect brick depots at Faulkton and Pierre, on the line of its proposed extension.

Aberdeen, S. D.—The Dakota Central Telephone Co. (J. C. Bassett, president), has secured a location in the central part of the city and will erect a telephone exchange and business block to cost $100,000. B.

Baltimore, Md.—The Herbert A. Weeks Co., of New York, has been awarded contract to erect the 9-story building for the Chesapeake & Potomac Telephone Co. Cost, about $400,000.

John Cowan, 106 W. Madison St., has the contract for erecting new asylum buildings on Cedar Ave., for the Egerton Orphan Asylum. The buildings are to be of brick, 4 stories high. Total cost, $60,000.

Report states that the Travelers & Merchants Association is considering the erection of a $60,000 clubhouse on Hanover St.

Braddock, Pa.—Louis Goldsmith and L. A. Katz will build a 6-story brick business block in Braddock. Cost, $50,000.

Bottineau, N. D.—Architect De Remer, of Grand Forks, is preparing plans for the State School of Forestry to be erected here at a cost of $50,000.

Bismarck, N. D.—The Hughes Electric Co., which has recently been incorporated with a capital of $200,000, will shortly begin the erection of a $60,000 telephone exchange and office building.

Berkeley, Cal.—We learn that school bonds amounting to $150,000 have been sold.

Beverly, Mass.—The plans of Cooper & Bailey have been selected in competition for the new $65,000 school house to be erected here.

Binghamton, N. Y.—We learn that Alonzo Robinson intends to erect a brick and stone residence, 68 x 90 ft., in Front St., costing $100,000. Plans by E. J. Vosbury, Savings Bank Bldg.

Brooklyn, N. Y.—The Clarke Realty Co. has purchased the southwest corner of Franklin and Jefferson Aves., a plot 100 x 125 ft., on which it will erect a 6-story elevator apartment house, similar to the two it is now completing in Glenada Place.

Birmingham, Ala.—The Southern Railway Co., New York, has purchased a site upon which it is proposed to build a union railway depot. It is estimated that the cost will be $1,000,000, and it is understood the plans and specifications for the structure are being prepared.

Birmingham, Ala.—It is reported that a 5-story office building, to cost about $75,000, will be erected here by the Caldwell Real Estate and Investment Co.

Charleston, S. C.—Plans have been completed for union depot to be erected by the Atlantic Coast Line Railway and the Southern Railway. Structure will be 150 x 300 ft., and cost from $150,000 to $200,000.

Chatham, Va.—The Chatham Savings Bank will rebuild building recently destroyed by fire.

Crookston, Minn.—The Grand Central Hotel Co. has decided to erect a $65,000 hostelry to replace the present structure on lower Broadway. Location of the new hotel has not been decided upon, but it is possible that a site for it will be purchased near the old hotel. B.

Chicago, Ill.—Plans have been drawn by Hill & Woltersdorf, 70 La Salle St., for a 5-story steel-skeleton warehouse for Parke, Davis & Co., wholesale druggists, 46 Franklin St. It will be located at the corner of Franklin St. and Crouch Place, and cost about $50,000.

F. A. Hill, 138 Washington St., has had designs made by Architects Sellon & Harley, 138 Washington St., for 11 dwelling houses to be erected at Oak Park. They will be built of stone and frame, 2-stories high, 24 x 40 ft. Cost, about $55,000.

Henry Ottenheimer is architect for the reconstruction of the building formerly occupied by the Cash Buyers' Union on West Van Buren near Halsted St., which was partly destroyed by fire early in the year. The new building will have a street frontage of 112 ft., and will be 100 ft. deep. It will be 6 stories high, of mill construction, and will cost $100,000.

It is reported that the Pioneer Paper Co. and Bradner, Smith & Co. jointly will erect a mercantile building on Ohio St., near Kingsbury. It will be a 7-story structure, 100 x 120 ft., of pressed brick and stone, costing $160,000. Huehl & Schmid, 163 Randolph St., architects.

Wm. H. Pruyn, Jr., is having plans prepared for a 3-story, 150 x 150 ft. brick and stone apartment house; cost estimated at $150,000.

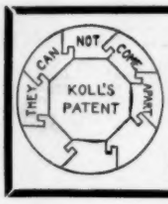
It is reported that Joseph M. Weber has arranged with Chicago and New York capitalists to erect in this city the Chicago Hippodrome, an institution patterned after the New York and London Hippodromes. The enterprise will entail an expenditure of $1,400,000, and the building, which is to cover a full city block, will be erected by next February.

Horatio W. Wilson, 218 La Salle St., has drawn plans for a 3-story apartment, 50 x 100 ft., which Sherman T. Cooper, the builder, will erect at 46th St. and Greenwood Ave. Cost, $60,000.

Plans have been drawn by Henry L. Newhouse, 4530 Prairie Ave., for an apartment to be built at 49th St. and Grand Boule., for I. A. Rubel and D. S. Stearns. It will be 3 stories high, 100 x 105 ft., and cost $75,000.

Thos. McCall, 1710 Ry. Exchange, has prepared plans for a 3-story apartment, 100 x 100 ft., to be erected at 5431 Jefferson Ave., for J. A. Carroll, at a cost of $70,000.

Cincinnati, O.—It is reported that Jos.



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G. Steinkamp & Bro., Mercantile Library Bldg., have prepared plans for an apartment house to be erected by the Emery estate on site bounded by Curtis St., Alms Pl., Park Ave. and Walnut Hills. Cost, about $150,000.

CRANFORD, N. J.—A company is said to have been formed, capitalized at $250,000, to build a large hotel on the "Bookhout" property, on the Rahway River. The hotel will be known as the Cranford Inn.

DUNLAPS, IND.—Bids will be received by the Co. Comrs., at Goshen, until July 6 for erecting a county hospital here. Address Wm. Whetton, Co. Comr.

DEADWOOD, S. D.—The Horseshoe Mining Co. has decided to rebuild its cyanide mill here, which was destroyed by fire a few weeks ago, at a loss of $300,000. The old mill, which was the largest of its kind in the world, will be reproduced as far as possible in the new one. B.

DALLAS, TEXAS.—It is reported that the National Exchange Bank will erect a 10-story steel-frame building.

EXCELSIOR SPRINGS, MO.—Henry Ettenson, of Leavenworth, Kan., it is stated, contemplates rebuilding the Hotel Elms, which was destroyed by fire.

ELKINS, W. VA.—It is reported that Mrs. Elkins intends erecting a $50,000 Y. M. C. A. building on Davis Ave.

FT. MACKENZIE, WYO.—Bids will be received by Capt. Jas. S. Parker, Q. M., U. S. A., Sheridan, on June 15, for constructing building at Ft. Mackenzie.

FORT LINCOLN, N. D.—Sealed proposals will be received until June 17, 1905, for constructing plumbing, heating and electric wiring, brick field officers' quarters, brick double set captains', lieutenants', and N. C. O. quarters and brick double barrack here. Information upon application here or at office chief quartermaster, St. Paul, Minn.

EXCELSIOR, MINN.—The Park Board has offered the Minnetonka Boat Club a location on the high ground immediately north of the city, and it is said that work will be begun this month on the $60,000 clubhouse the club has been planning to build for some months. B.

GIBSONTOWN, PA.—Bollinger Brothers, 133 Girst Ave., Pittsburg, have the contract for a brick warehouse for Moore & Sinnott, Gibsontown. Cost, $50,000.

GREEN BAY, WIS.—It is reported that the Board of Education contemplates erecting a central high school at a cost of $100,000.

HILLSBORO, N. D.—The county commissioners of Traill County have decided to readvertise for bids for erecting the new court house, which is expected to cost about $75,000.

HURON, S. D.—The State Fair Association has decided to spend $50,000 in the erection of new buildings at the Fair Grounds in the western part of the city. The buildings to be put up include an agricultural hall, a cattle barn, and a swine and sheep barn, all to be of reinforced concrete and entirely fireproof. It is hoped to have the buildings ready for occupancy by Fair time next fall.

HOBOKEN, N. J.—George B. McIntyre, Trust Bldg., West Hoboken, N. J., is taking figures on a lodge building to be erected in the east side of Washington St., north of 10th St., Hoboken, for the Benevolent Order of Elks, at a cost of over $50,000.

JERSEY CITY, N. J.—The old-fashioned frame mansion on Jersey City Heights in which Gen. Grant's mother and sisters lived for many years and in which Mrs. Grant died in 1884, is one of the dwelling houses that are to be razed to make room for a new county court house. The new building is to cost $1,250,000.

JANESVILLE, WIS.—The Cargill Memorial Methodist congregation will erect a new church building to cost $50,000.

KANSAS CITY, MO.—It is reported that J. W. McKamey will erect 6-story hotel, to cost $50,000.

LA CROSSE, WIS.—L. F. Eaton and his sister, Mrs. Mary L. McArthur, both well-known residents of this city, have donated ten acres to the State as the site of the proposed normal school. The tract is near the Granddad Bluff, in the eastern part of the city, and is valued at $50,000. The legislature made an appropriation of $150,000 for the normal school on condition that the city of La Crosse provide a location, and now that this condition has been complied with the money will be available immediately and work begun at once on the new school. B.

LINCOLN, NEB.—It is reported that the Chicago, Burlington & Quincy Railway Co. intends rebuilding and making improvements to the passenger station here, expending $75,000.

MANKATO, MINN.—The Evangelical Lutheran Hospital Association, of Southern Minnesota, has concluded to build a $60,000 hospital building on a site recently purchased in the western part of the city. The property comprises several acres, and building to be put up is so planned that it can be added to from time to time without destroying its symmetry. B.

MINNEAPOLIS, MINN.—It has been announced from the general offices of the Soo road that work will be begun at once on 25 brick passenger stations and freight depots on the new extension from Thief River Falls, Minn., to Kenmare, N. D. The total cost is estimated at $150,000. B.

Plans for a new union depot to cost $1,000,000 are said to have been submitted to the Commercial Club for approval. The new depot will be located on the site of the present one, and further plans of the Great Northern Co. are out as including a huge freight terminal in the Bryn Mawr district. B.

The Northwestern Hospital Association has decided to raise $75,000 for an addition to the present hospital building at Chicago Ave. and 26th St. The board of directors claim that at least half of the money is already in sight, and preparation of plans will be undertaken immediately. B.

The State Board of Control has advertised for bids on the bacteriological laboratory at the State University here. The appropriation made at the last session of the legislature for the building amounts to $100,000, but the plans are said to contemplate a structure that will cost considerably more than that. B.

The Minneapolis Club will hold a special meeting next week to vote on the question of building a new clubhouse to replace the present quarters at First Ave. South, and 6th St. The club has already obtained an option on property at Second Ave. South, and 8th St., and it is reported that the great majority of the club members are in favor of making the change. Tentative plans for the new clubhouse are said to provide for building to cost upwards of $200,000. B.

MONTREAL, CANADA.—Walter M. Lowney Co. of Canada, Ltd., have just concluded a contract with Frank B. Gilbreth, of New York and Boston, for the building of a 6-story factory and warehouse at Montreal,

Continued on page xv.

The Barrett Specification

THE accompanying Skyline Views of New York and Chicago include the finest specimens of modern architecture and engineering in the world, as applied to commercial buildings. The value of these buildings and the land upon which they stand represents hundreds of millions of dollars.

What more convincing proof can be given of the value of Coal Tar Products than the fact that all the buildings referred to by name in these photographs are Roofed or Waterproofed with Tarred Felt and Coal Tar Pitch?

The roofs in practically all the cases have been laid along the lines advocated in THE BARRETT SPECIFICATION, and the waterproofing of the foundation walls, cellars and vault arches, has been similarly applied. **(See Barrett Specification Over Concrete).**

NEW YORK

On some of the modern fireproof buildings the roofs are finished with a course of Vitrified Tile or Brick, laid in Portland Cement over the five-ply Tarred Felt and Pitch, but the majority are finished with a covering of Slag or Gravel.

The Pennsylvania Freight Warehouses in the foreground were roofed with Coal Tar Pitch, Felt and Gravel more than thirty years ago, and many others show a similar record of service and satisfaction.

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CHICAGO

All the buildings named below and shown in the two skyline views are roofed or waterproofed, or both, with Tarred Felt and Coal Tar laid along the lines advocated in **THE BARRETT SPECIFICATION.**

NEW YORK

Central	Telephone	Equitable Life	Johnson	Bowl'g Green
World	Beard	Schermerhorn	Wall Exc'nge	Whitehall
Tribune	Engineering	Hanover Bank	Broad Ex.	Washington
Park Row	Wes'n Electric	Empire	42 Broadway	Produce Ex.
Saint Paul	Wash'ton Life	Century	Columbia	Custom House
West'n Union	Hazen	Manhat'n Life	Hudson	Maratime
Havemeyer	Mutual Life	Astor	Standard Oil	
Telephone	Trinity	Blair	Wills	Bank of Com.

Coal and Iron Exchange, Fidelity and Casualty, Commercial Cable, Aldridge Court, J. Monroe Taylor, 135 Broadway, American Surety, Manning, Maxwell & Moore, Broadway and Maiden Lane, American Bank Note Co., 60 Wall Street

CHICAGO

Studbaker	Art Institute	Old Colony	Reliance	Henrietta
Fine Arts	Railway Ex.	Fisher	Venetian	Unity
Chicago Club	Pullman	Monadnock	Stewart	Masonic Temp.
Victoria Hotel	People's Gas	Majestic Hotel	Public Library	Ashland Block
Isabella	Manhattan	Heyworth	Trade	Temp. P. O.

Old Powers Building, Keith Edson & Co., Chicago Athletic Club, Western Bank Note, Auditorium Hotel and Theatre, Chicago Orchestra, Gage Bros. & Co., Public Library, Great Northern, Marshall Field & Co. (Part), Montgomery Ward & Co., Dearborn Block (1872), Columbus Memorial, Auditorium Annex

and the block of unnamed mercantile buildings in the right-hand foreground

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BUILDING NEWS

Continued from page xiii.

on the cost-plus-fixed-sum basis. The building, when finished, will cost upward of $100,000. The contract includes furnishing not only the building, but a modern refrigerating plant and the candy-making power plant. Messrs. Dean & Main are the engineers. The plant is to be in running order by September 1.

MUSKEGON, MICH.—The Pere Marquette officials have decided to rebuild the roundhouse destroyed by fire some days ago at a loss of $125,000. It is reported that the officials of the company are seriously considering the advisability of removing the company's machine shops from St. Thomas, Quebec, to this place and expending $500,000 in putting up a new plant.

MADISON, WIS.—The State legislature has passed a bill setting aside $100,000 for the erection of a State sanitarium for tuberculosis patients. The location of the sanitarium has not been determined, although it is likely that it will be given to one of the smaller towns in the northern part of the State, among the pineries.

MINNEAPOLIS, MINN.—The Powers Mercantile Co., whose department store building was damaged by fire last winter, is planning a $150,000 extension and alteration of the building. Work will be begun at once.

The Brunswick Hotel Co., which has recently incorporated, with a capital of $200,000, is reported to be contemplating the expenditure of $100,000 in enlarging and remodeling the present structure at Fourth St. and Hennepin Ave.

St. Mark's Episcopal Church is agitating the question of removing from the present location at Twelfth Ave., North, and Sixth St., to a location further from the business district, where a new church building will be put up to cost, with the rectory and guild house, about $75,000.

The plans for the Pond Bldg., at First Ave., South, and Seventh St., have been changed to such an extent that the building when completed will cost nearly $100,000, instead of $50,000 as was at first expected.

MINEOLA, L. I.—It is stated that the Millington property on Main St. has been purchased by Benjamin D. Hicks, president of the Nassau County Bank, and will be used as the site of a building for the Nassau County Bank, which it is contemplated to erect in the near future.

MONTREAL, QUE.—A convent, 5 stories in height, 50 x 578 ft., is to be erected by the Sisters of Notre Dame Congregation on Sherbrooke St. Cost, about $1,500,000, exclusive of equipment.

Darling & Pearson, Toronto, Ont., have drawn plans for a bank and office building for the Canadian Bank of Commerce. Cost, $1,500,000.

The Eastern Township Bank will erect a new block here at a cost of $300,000.

MONMOUTH, ILL.—The Monmouth Hotel Co. has been organized for the purpose of erecting a $50,000 hotel.

MEMPHIS, TENN.—It is reported that bids will soon be asked by the Illinois Central Railroad (H. U. Wallace, Ch. Engr., Chicago, Ill.), for the erection of a 3-story warehouse on Main St., this city. Cost, $150,000.

NORTHBRIDGE, MASS.—The Northern Land Co., of Boston, has bought 8 acres of land in Northbridge, situated west of Bartlett Rd. and south of Elm St.; 122 lots will be laid out.

NASHVILLE, TENN.—Plans will soon be received for two buildings which are to be erected at the Vanderbilt University. One, which is to be the administration building, will cost $125,000 and $100,000 will be expended on the other, which is to be a chemical laboratory.

NATICK, MASS.—By a vote of 148 to 19—more than the necessary two-thirds—the bill to authorize Natick to incur a debt of $100,000 for a municipal building was recently passed over the Governor's veto by the House of Representatives, and, as the Senate had already passed the bill over the veto, it becomes law.

NEWARK, N. J.—Plans are being prepared by L. H. Broome, 16 Exchange Pl., Jersey City, for a department store, to be erected for F. G. Agens, 13 Beaver St., Newark. Brick and stone, 3 stories, 75 x 375 ft. Cost, $100,000.

NEW HAVEN, CONN.—It is reported that the old Hillhouse estate, Prospect St., comprising 30 acres, has been purchased by Yale University. A botanical garden will be laid out, and eventually a building for the School of Agriculture erected here. It is stated that the purchase is made on behalf

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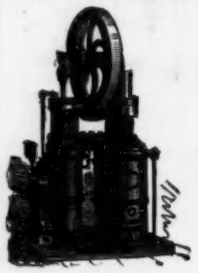

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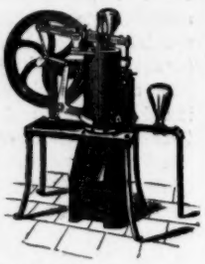

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of the graduates, who will raise money to buy and present the property to the University.

Newton, N. C.—Catawba College (Geo. A. Snider, president), has had plans prepared by Hook & Sawyer, Charlotte, for the erection of 3-story brick building 110 x 100 ft.

New York, N. Y.—Negotiations are under way for the building of a new hotel to cost in the neighborhood of $6,000,000. It is proposed to build on the site of the old Hotel Brunswick. The plot occupies the block on Fifth Ave., from Twenty-sixth to Twenty-seventh Sts., and has a depth of 157.6 ft.

The City Investing Co. has loaned to the Central Realty Co. $450,000, on the property at the northeast corner of Amsterdam Ave. and 72d St., where a 12-story brick apartment house is to be erected.

The original plans for the new Bellevue Hospital have been modified by striking out some of the ornamental exterior features of the buildings. The first appropriation of $850,000 has been made and will be used in the construction of pavilions "A" and "B." The modified plans call for an expenditure of $8,500,000 instead of $10,000,000, which was the amount the original plans called for.

The New York East Conference of the M. E. Church has purchased the Germania Assembly Rooms, on the Bowery, between Houston and First Sts., and will convert the building into headquarters for evangelical work.

Borough President Ahearn has advertised for bids, to be received until June 22, on the proposed alterations to the interior of the new Hall of Records. The city will probably spend $600,000 for these latest improvements. Plans and specifications for the changes are on file in the offices of Horgan & Slattery, the architects.

Negotiations are said to be practically concluded for leasing the Martinique, a 16-story apartment hotel at 1268 Broadway and 54 and 58 West 23d St., to Wm. Taylor & Son, for twenty years. A new hotel, which will include the present Martinique, will be erected within the next two years, according to present plans. Only a part of the enlargement will be made in the near future. A salesroom occupied by Rogers, Peet & Co. adjoining the entrance to the Martinque on the east, in 33d St., will be remodeled into a women's restaurant, while the basement beneath the Martinique, extending through to Broadway, will be refitted into a men's café. Otherwise the hotel as now constructed will remain until the main section of the new hotel is erected.

It is announced that plans are being drawn for the reconstruction of the building at the northeast corner of Fifth Ave. and 19th St., of the building adjoining, and of that abutting in 19th St. The new building will be an extension of Lord & Taylor's store, which now occupies the northerly end of the block, with a frontage from Broadway to Fifth Ave. The building will be 8 stories high and similar in detail to the addition made two years ago.

Plans have been filed for an 8-story office building for the Park Row Realty Co., at 3 Park Row, and to be known as the Belmont Bldg. It will have a facade of Indiana limestone, with a frontage on Park Row of 25 ft. and a depth of 62.8¼ ft., and an "L" of 12.3 ft. front on Ann St. It is to cost $80,000. Robertson & Potter, archts.

Omaha, Neb.—The Wabash road has obtained options on several blocks in the business district, and the report is general that a union depot to cost $150,000 is contemplated.

Orange, N. J.—Philip J. Bowers and Wm. S. Fairchild have purchased the Orange Oval, which will be divided into 80 lots, and probably built upon this summer.

Oakmont, Pa.—Alden and Harlow, Farmers' Bank Bldg., are taking bids on an exchange building for the Central Distract Printing and Telegraph Company (the Bell Telephone Company), at Oakmont, Pa. L.

Pittsburgh, Pa.—The Pittsburgh Young Women's Christian Association, Fifth St., will erect a 7-story brick and granite fireproof building. Cost, $250,000. Address the president. No architect has been decided on.

J. P. McKinney, care of McKinney Manufacturing Co., will erect a $50,000 residence in Fifth Ave. No architect has been chosen.

Architects Alden & Harlow, Farmers' Bank Bldg., awarded the contract to the Henry Shenk Co., Lewis Bldg., for a 10-story warehouse and office building for the Central District Printing & Telegraph Co. at Seventh Ave. and Montour Way. The building will have steel frame and fireproof construction and will cost $300,000.

Architect Fred G. Scheibler, Jr., Wilkinsburg, Pa., is taking bids on an apartment house for Robinson & Bruckman, Brushton Ave. Cost $75,000.

Plans will be submitted shortly for a parish house, school and nuns' home for St. Paul's Roman Catholic Church at Craig St. and Fifth Ave. Cost $70,000. Address Rt. Rev. J. F. Regis Canevin.

Architects George S. Orth & Bros., Stevenson Bldg., are taking estimates on a 10-story, fireproof, steel frame office building for the Pittsburgh Coal Co., 232 Fifth Ave. Cost, $400,000.

Philadelphia, Pa.—City Treasurer Shoch will shortly begin the erection of 105 dwellings in the Twenty-seventh Ward, involving an expenditure of more than $225,000. The houses will be 2 stories high, with fronts of 15 and 16 ft., erected in 54th, 55th, Larchwood and Addison Sts. and Osage Ave.

Seward L. Bowser has been granted permits for 19 3-story dwellings, each 15.7¾ x 57.1 ft., in Erie Ave., east of 18th St., to cost $76,800.

Arthur J. Wright will erect for Locke & Cronin 48 2 and 3-story dwellings in Walton Ave., Catherine and 53d Sts., to cost $132,400.

The Christian Association of the University of Pennsylvania has purchased from J. Granville Leach the dwellings at 419-21-23 South Taney St. and 424-26-28 South 26th St. The lot measures 44 x 120 ft., which, with other properties recently purchased, will be utilized as a site for an addition to the present buildings.

William Steele & Sons are taking estimates for a large textile plant, to be erected at Allegheny Ave., Boudinot and Hurley Sts. The plans provide for a 5-story and basement main factory building, 55.6 x 252.10 ft., with a wing 55.6 x 42.3 ft., and a 1-story powerhouse, 95.5 x 22.8 ft. Both buildings will be of brick, of the slow-burning mill construction plan, with brick tower fire-escapes.

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John R. Wiggins & Co. have been granted permits for a 3-story public school, 75.8 x 87.9 ft., at 38th and Warren Sts., and one to measure 123.8 x 173 ft., at the northeast corner of 22d and Brown Sts. The cost for the two will be $187,000.

Henderson & Co. are taking estimates for a nurses' home for the Kensington Hospital for Women, in Diamond, near Hancock St.

PITTSBURGH, PA.—J. G. Vilsack, care of East End Savings and Trust Co., will build a residence at North Negley Ave. and Bryant St. Cost, $35,000. L.

The Avenue Theatre Bldg., the oldest theatre in Pittsburgh, was burned June 2. The owners are now considering the erection of a modern store and office building on the site in Fifth Ave. Address Harry Davis, manager of the Avenue Theatre, or Thomas N. Miller, care of Avenue Theatre. L.

Murphy & Hamilton, Heeren Bldg., have contract for 14-room brick and stone school house for the Morehead sub-district. Cost, $100,000. L.

Architect Charles Bickel, 524 Penn Ave., is taking preliminary bids for a 4-story brick and stone office building for the Pittsburgh Terminal Warehouse and Transfer Co., South Side. Cost, $75,000. L

Architect E. M. Butz, Bessemer Bldg., has plans for a 3-story apartment building for Mrs. Harry Schaub, at Larimer and Shetland Aves. Cost, $50,000. L.

The Calvary Episcopal Church has commissioned Architects Cram, Goodhue & Ferguson, of Boston, to prepare plans for church and parish house at Shady and Walnut Sts. Cost, $300,000. L.

READING, PA.—At a meeting of the Building Committee of St. Joseph's Hospital, Head & Scholl, architects, were formally engaged to take charge of work in connection with the erection of the annex to the institution. The architects will now go to work upon the detailed drawings and specifications, and bids will then be invited from contractors.

ROANOKE, VA.—It is reported that a new steel mill is to be erected here, and that $1,000,000 has been subscribed for the purpose. A 20-acre tract of land on the line of the Norfolk & Western Railroad has been purchased for a site. E. Cooper Wills, of New Jersey, represents the syndicate interested, in which there are several New York capitalists.

SUPERIOR, WIS.—The Wisconsin Central is about to begin the erection of a $150,000 passenger station and freight depot here in connection with the proposed extension from the head of the lakes to Ladysmith, Wis.

ST. PAUL, MINN.—Contract for the James J. Hill School, to be erected at Oxford St. and Selby Ave., will probably be let this week. It is expected that the cost will be about $60,000. B.

The City Council has decided to authorize a $150,000 bond issue to provide the necessary funds for a new high school. The site has not been decided upon, but it is likely that it will be somewhere in the southern part of the city. B.

Members of the Woodland Park Baptist Church have decided to erect a $50,000 church building at Ashland Ave. and Grotto St. The church society has recently purchased several lots at this location, and work on the new building will be begun within a few weeks. B.

Work will be begun this week on Unity Church, at Portland Ave. and Grotto St. The church will have a seating capacity of 800, will be built of St. Paul sandstone, and will cost in the neighborhood of $50,000. B.

Work began this week on the American District Steam Co.'s power plant at Market and Third Sts. The plans call for a fireproof structure, 6 stories high, costing $125,000. B.

The joint city hall and court house commission is reported to be considering the advisability of providing for $100,000 addition to the city hall and court house building. The addition will probably be made by extending the north wing to Fifth St., but it is doubtful if this extension can be made for much less than $2000,000. B.

SOUTH MCALESTER, I. T.—A Masonic Temple, to cost $100,000, will be erected in this city. The plans, which have been accepted, call for the finest edifice of its kind in America. Harper S. Cunningham is director.

TOLEDO, O.—At a meeting of the Toledo Shriners, to be held June 15, in their hall, Zenobia Theatre Bldg., decision will be reached relative to erecting a large 3-story building to be used largely by that organization as a lodge room. M.

TORONTO, ONT.—Carrére & Hastings, 28 E. 41st St., New York, are taking figures on a bank and office building, to be erected at Toronto by the Traders' Bank of Toronto. Brick, stone and steel, fireproof, 15 stories, 90 x 100 ft. Cost, $500,000.

TOLEDO, OHIO.—The various labor unions of this city are considering the question of erecting a labor temple. The Central Labor Union, composed of representatives of all the unions, has appointed a committee to procure plans and specifications for a 6-story brick building and report to the Central body. This committee is headed by Harry W. Bausch, Clark's Hall, Cherry St. The committee has in mind the erection of a building, the first story of which shall be fitted up for store rooms, the second, third, fourth and fifth for offices for labor-union agents and assembly rooms for the various unions, and the sixth floor for lectures, etc. Probable cost, about $50,000.

WINNIPEG, MAN.—We are informed that the Winnipeg Street Railway Co. will build a new station on Mill St., to cost $100,000.

WALKER, MINN.—The legislature has appropriated $50,000 for a State sanatorium.

WATER VALLEY, MISS.—Board of Supervisors has ordered the issuance of $50,000 of bonds for the erection of proposed jail building.

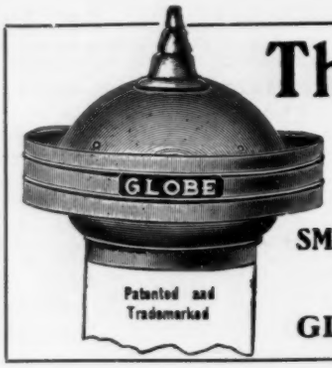
WILLIAMSTOWN, MASS.—It is announced that Williams College will soon erect a $150,000 dormitory. Rev. H. Hopkins, president.

WOBURN, MASS.—The School Board has unanimously approved plans for a new high school building, as submitted by Robert A. Cook, of Milford, and indorsed by the Board of Public Works. The building will be 140 x 70 ft., three stories high, with a parapet roof, built of gray brick. The appropriation is $100,000.

WINONA, MINN.—An agitation has begun here for better city hall and jail, and it is planned to erect a $75,000 building to serve both purposes. $20,000 is available now.

WINNIPEG, MAN.—It is currently reported that the Northern Pacific will unite with the Canadian Northern and the Grand Trunk Pacific in the erection of a union depot and freight terminals here. A recent visit of high officials of all three roads is said to have resulted in the selection of a site, and report says that subsequent negotiations have placed the three roads in joint possession of property suitable for the depot and terminal facilities. It is claimed that the three roads will, together, spend three-quarters of a million dollars in the undertaking. B.

WINONA, MINN.—The Winona Gas Co. has been reorganized with W. B. Parsons as president, and steps will be taken at once toward the erection of a $150,000 gas plant to take the place of the present plant. The reorganized company has recently increased its property holdings in the vicinity of the old plant, and work on the new structure will probably be begun at once. B.



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